APRIL, 1959

AMATEUR RADIO

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AMATEUR RADIO

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EDITORIAL

★

THE LUST FOR DX

"DX IS all right. To desire to work the ends of the earth is a laudable ambition. We know, because we ourselves went through it. To be the first to work a new country is to enjoy a terrific new 'kick'. We know that, too, for we had the honor of being the first to click with a couple of countries. And to have a transmitter so good that one doesn't have to content oneself with modest ranges but can go after the most distant station that can be heard is no more than the normal desire of every normal Amateur.

"But when this craving for DX reaches the proportions of an obsession, when it blinds its possessor to the realisation that there are other forms of Amateur activity, it is just as bad as any other form of intemperance. Amateur Radio is suffering today because the hunger for super-distance contact has become a lust which has almost killed short range, friendly, casual contacts. This business of friendly contacts with one's own radio neighbors is really the most important thing in the game. It was what built up the wonderful spirit of the Amateur body; it was this camaraderie of the air which cemented all Amateur Radio in the splendid solidarity which our 'old-timers' remember with a sigh. Today it is precious near gone. We have sounded the warning before. If we don't look sharply now, the most potent thing in the Amateur fellowship will be beyond our recall.

"The old-timers 'wonder what's the matter'. We've been wondering, too, and we believe that this is it. Is the gentle art of radio operating a more bloodless and a less human and enjoyable matter than it used to be? If so, let us remember that we make the game ourselves, and that we have it in our power to make it anything we wish. A warm fellowship of kindred spirits or a cold and cheerless world.

"The moral in this for the operating Amateur is simple: be more human; learn to talk; use your station as an instrument for the cultivation of friendships; give heed to the spirit of Amateur Radio, and learn that there is something in the game far more precious than the eternal hollering for QSL cards."

The above extracts from the Editorial of "QST", May 1926, appear to us to be equally applicable in April 1959. However, the expanded fields of experimentation now open to the Amateur means that the exchange of valuable technical information during these friendly local contacts far outweighs the call of DX.

FEDERAL EXECUTIVE.

THE CONTENTS

Solid State Radio Frequency Amplifiers

PART ONE

C. S. RANN,* VK3AAK

OVER the last few years there has been an increasing interest shown in non electron tube amplifiers in the u.h.f. and microwave regions of the spectrum. These amplifiers are usually described as "solid state amplifiers" because the active component is usually some inorganic compound such as germanium metal or ruby. Whilst the modern technical literature on these amplifiers makes rather difficult reading, the basic principles are not new and a clear description of the mode of operation of the amplifier can usually be had by referring to the original research papers. It is the purpose of this article to give a description of two of the lesser known solid state amplifiers and to provide literature references for any experimenters who wish to make a study of the subject.

The three most discussed solid state amplifiers at present are: (1) The transistor, (2) the maser, and (3) the parametric amplifier or mavar. I feel that the transistor applications to radio frequency amplifiers have been described adequately in the popular literature and are easily available, so this article will deal with simple descriptions of the maser and parametric amplifier.

Superficially these two amplifiers are very similar. Each amplifier has low noise, limited by the thermal noise of the electrons in the amplifier input circuit. Both amplifiers obtain their gain by simple regeneration at the frequency of the desired signal, and will oscillate if too much regeneration is applied. In both cases the amplifier obtains the power required for regeneration from a separate oscillator called a "pump oscillator," which oscillates at a frequency different from that of the signal. Finally, both amplifiers are narrow band width devices as perhaps would be expected from a regenerative type of amplifier. Their claim to serious attention is that they are capable of giving high gain at low noise, and indeed they theoretically should be far superior to a thermonic electron tube as these amplifiers do not have flicker noise, induced grid noise, shot noise or partition noise. In the case of the maser, the amplifier works at liquid air temperatures and has such a low noise figure that it approaches the theoretically perfect receiver.

The explanation of the working of each amplifier is, however, quite different, although one may suspect that a more fundamental connection, whilst not yet apparent, possibly does exist. The maser depends on the electrons in a substance giving up their energy in the form of a radio wave. Actually the electrons surrounding the atoms in the maser absorb energy at the pump frequency and re-emit energy at the signal frequency. The parametric amplifier, on the other hand, depends on the non-linearity existing between the terminals of a reactance. If two frequencies are fed into this reactance an infinite series of sum and difference frequencies result; it can be shown that if certain of these resulting frequencies are made to supply power to a tuned circuit, a negative resistance characteristic will appear at another frequency which can be made the signal frequency, hence giving regeneration. The extent of regeneration can be controlled by the power of the pump oscillator.

* 2 Georgiana St., Sandringham, Vic.

THE MASER AMPLIFIER

The name maser for this amplifier comes from "Microwave Amplification by Stimulated Emission of Radiation." A description of the maser is impossible without delving into the physics of the atom, in particular the physics of the electrons which surround the nucleus of the atom. It is assumed that most readers will have an elementary knowledge of atomic processes, however in writing the following description, the aim has been to keep the discussion on this aspect to a minimum, giving only the essentials. If because of this it is found that some details are not clear or that further information is required, a bibliography has been included, the references of which will supply further details on the different types of masers.

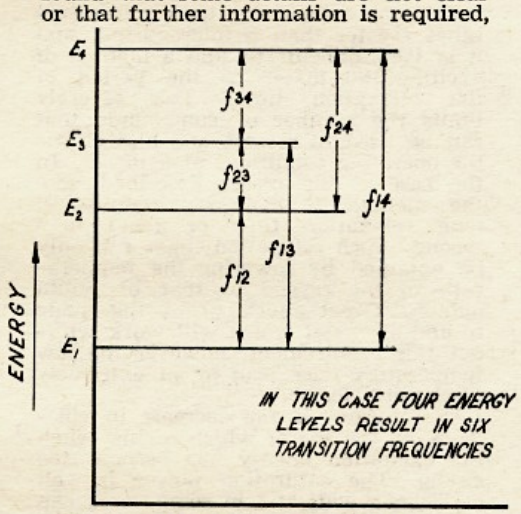

FIG.1. ILLUSTRATION OF THE FREQUENCIES IN A SERIES OF FOUR ENERGY LEVELS

A useful analogy to the maser is the phenomena of fluorescence. When ultraviolet light falls on some types of chemical crystals they will fluoresce, giving off light visible to the eye. Light is an electromagnetic radiation identical with radio waves except for frequency. In the case of flourescence the crystal absorbs energy at the high frequency of ultraviolet light, and re-emits this energy at the lower frequency of visible light. The maser does exactly this but at microwave frequencies.

To understand the absorbing and re-emitting processes, we must consider the many electrons associated with the nucleus of the atom. These electrons exist at different energy levels, usually described as different orbits around the nucleus. These energy levels, however, are discrete quantities and if an electron were to absorb energy it would jump to a higher level; it would not just gradually increase in energy. This principle was originally stated in the "Quantum Theory" and the small increments in energy are called "quanta". This theory provides the relationship between the energy and the frequency of electromagnetic radiation associated with the jump of an electron from one level to another.

$$\text{Frequency (f)} = \frac{E_1 - E_2}{h}$$

where E_1 is initial energy.
E_2 is resulting energy.
h is a constant value called "Plank's Constant" after one of the pioneer scientists of the quantum theory.

This formula is applicable for both absorbtion and emission of energy. For a radio wave to be absorbed by a substance it must be of such a frequency that the above formula is obeyed, similary the same equation predicts the frequency of the emitted radio wave when an "excited" atom returns to the normal or equalibrium state. Reference to Fig. 1 will show some energy levels and the frequencies (f) associated with these levels.

If there are many energy levels in an atom it becomes apparent that energy can be absorbed at any of the lower levels and be re-emitted at many different frequencies, as shown in the example used in Fig. 1. Energy differences corresponding to visible light would be about one electron-volt. The energy differences for microwave frequencies would be much smaller, about 10^{-4} to 10^{-5} electron volt. A v.h.f. signal, say 100 Mc., would correspond to an energy difference of 4×10^{-7} electron volt.

There are three possible ways an electromagnetic wave can interact with the electron energies of an atom. These are: (1) Absorbtion, (2) Spontaneous Emission, and (3) Stimulated (or Induced) Emission. "Absorbtion" is the process whereby the electrons in the atom are given extra energy and put into higher levels. Compounds show absorbtion bands, thus for absorbtion to occur the frequency must be within this band. In the case of light we have a coloured solution. When white light of many frequencies falls on one side of the bottle, and passes through to the other side, absorbtion of some frequencies occurs during transit, and the light emerging at the other side is coloured, hence the colour of the solution is that of the light which has not been absorbed. In the case of the maser the energy of the pump oscillator is absorbed in order to get the atom in an excited or unstable state. "Spontaneous emission" occurs when electrons are falling to lower levels without requiring any further energy to cause the effect. The process of spontaneous emission is practically non existent at microwave frequencies. "Induced" or "Stimulated Emission" is the triggering of the release of energy at a high level to a lower level. An electromagnetic wave of low power can serve to release this stored-up energy. In the case of

the maser the received signal is used to do the triggering, the electrons having first been placed in the higher level by the atom absorbing energy from the pump oscillator. This "molecular energy" released by the signal is coherent with the signal, i.e. the phase is related directly to that of the signal.

In the microwave region the actual energy transitions are due to changes in the "spin" of the orbiting electrons. The energy changes when electrons change orbit as previously described are much greater and result in the emission of visible light. If an electron spins about an axis through its centre it creates a magnetic field. If the electron field is at an angle to the applied field a force will be exerted on the electron tending to rotate it into line, just as a compass needle will line up with an applied field. The electron, in changing its spin direction, causes an energy change which will still maintain discrete quantum increments. The electrons in an atom occur in pairs, any two electrons in a pair are identical except that they have spins in opposite directions. Sometimes, however, an atom can have an odd electron that has no matching electron of opposite spin. As the field from each pair of electrons cancel, an atom with no unpaired electrons has zero field. Any unpaired electrons give an atom a residual field and it is said to be "paramagnetic". The maser to be described in this article is a "Three level paramagnetic ion maser". An ion is an atom which has more electrons than it should have to be neutral. Copper metal for instance has neutral copper atoms, but a blue copper sulphate crystal contains copper ions which carry a positive charge due to a lack of electrons.

When many atoms are assembled into a crystal their energy levels, which were previously discrete quantities, become broken up into many sub-levels due to mutual interference of the atoms with each other. See Fig. 2. This can lead to an apparent continuous energy distribution and this state of affairs must be suppressed in the case of maser operation. This is achieved by taking paramagnetic ions and putting them in a crystal of neutral atoms which are not showing any tendency to react with a field. In this way the ions are kept apart and because no mutual interference occurs they can maintain discrete energy levels. An example will be given later of the type of system used.

The next point to consider is the practical difficulty of exciting the maser to emit energy. It is one of the major difficulties at the present time and many methods are used. In the case of the three level maser which will be described here, we have only three energy levels (see Fig. 2). The electrons must be driven up to the higher level at a microwave frequency (f_{13}), the electrons may then fall back to lower levels, emitting radiation at the microwave frequencies f_{23} or f_{12}. Therefore the pump frequency would be f_{13} and the maser could be made to amplify at either f_{23} or f_{12}.

Two important practical considerations should be discussed at this stage. They are known as "relaxation time" and "saturation". Relaxation time is virtually a measure of the time an electron will stay up in the energy level E_3, before falling back to the lower

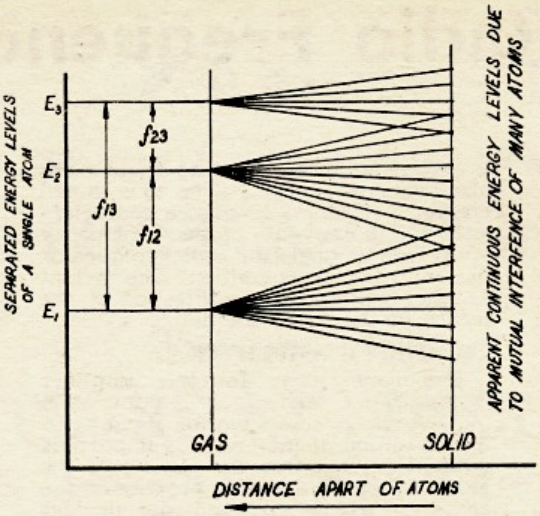

FIG. 2. THE SPREAD OF ENERGY LEVELS WHEN PARAMAGNETIC IONS ARE TOO CLOSE TO EACH OTHER

levels. If the electrons fall back quicker than they can be put up there, the maser will not work. Unfortunately, not many compounds have relaxation times greater than a microsecond, and it is very difficult to find a method of exciting the maser in the period of the relaxation time. This severely limits the number of compounds that can be used in masers and also effects the operating conditions of a maser. In the case of the maser described here the method of excitation requires a long relaxation time of about 10^{-4} second. Such relaxation times can only be obtained by lowering the temperature of the crystal to that of liquid helium. Great efforts are being made to find a crystal which will work without this requirement, however the low temperature does lead to an extremely good noise figure.

"Saturation" is the decrease in efficiency of the maser which occurs when the excitation energy has become too strong. The saturation power is well under one watt and in some cases can fall to 10^{-10} watt, hence it is obvious that the maser is a low power device, however this need not be a disadvantage for use as a receiver.

The following example may serve to illustrate the practical requirements of a maser. In this case a crystal of hydrated lanthanum ethyl sulphate was used. Some ($\frac{1}{2}$%) of the non magnetic lanthanum ions were replaced by paramagnetic gadolinium ions. The crystal was placed in a cavity, hence positive feedback was possible, and regeneration could occur. It is of course easy to obtain high gain with a regenerative amplifier, but as always the selectivity becomes high, i.e. a narrow bandwidth. In masers this is very serious because the low power available from the atoms requires considerable positive feedback, hence the maser must operate near the point of oscillation and instability difficulties are always present.

The crystal in this example was placed between an electromagnet applying a d.c. field of 2850 gauss. This can virtually tune the frequency of the maser by altering the height of the energy levels. The maser was then immersed in liquid helium. The cavity was tuned to two frequencies, $f_{13} = 17.5 \times 10^3$ Mc., and $f_{12} = 9 \times 10^3$ Mc. A microwave oscillator at f_{13} was coupled to the cavity and the signal power was available at frequency f_{12}. When the power of the pump oscillator was increased the coupling loss and the wall loss at the signal frequency of 9×10^3 Mc. gradually diminished until a point was reached when the emitted power at the signal frequency equalled all of the losses in the system. Past this point the maser broke into oscillation. The strength of the oscillations increased as the pump power was raised further. Fifteen microwatts of power at 9×10^3 Mc. was observed for 200 milliwatts of 17.5×10^3 Mc. pump power. At pump powers of 60-95 milliwatts, the emitted radiation was enough to compensate for most of the wall and coupling losses, hence the maser operated as an amplifier.

In Fig. 3 is shown a system for a low noise receiving station. The maser used with a crystal mixer are both low noise solid state devices. The circulator is a microwave trap which controls the direction a signal may pass in coming from the aerial to the mixer, the direction is given by the arrow, and the signal may pass from one quadrant to the next in this direction.

In concluding this description I would like to point out that there are many interesting applications of masers which I have not mentioned. The "atomic clocks," which are the most precise frequency standards known at present, are very simple types of masers using ammonia gas (in one case) and do not require any cooling to liquid air temperatures. There are also many other ways of exciting and operating a maser, however they all work on the same fundamental principles described here. The example given in this article is possibly the most likely type to be used as a receiver because it is tunable, many maser systems only work on given set frequencies.

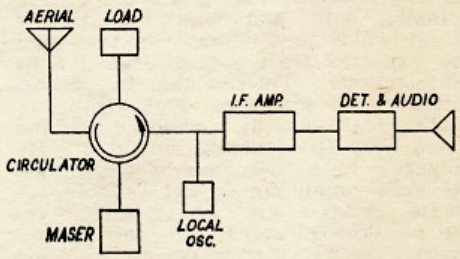

FIG. 3. SUGGESTED MASER RECEIVER

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(Continued on Page 16)

SIMPLE SIDEBAND*

PARTS ONE and TWO

LESTER EARNSHAW, ZL1AAX

THIS article is intended as the first of a series delving into the supposed mysteries of Single Sideband. But so that it may be of interest to those who are not "sideband happy", they will also contain information which is applicable and useful to those who subscribe still to the a.m. technique. But above all, they will not be technical more than is absolutely necessary; there will be no maths and there will be practical articles from which any Ham can build an s.s.b. rig. First though, there are various theories and concepts which are not all what they might be, and if you are going to get a rough idea of what s.s.b. is about, it is good that you start off on the right foot and clean out the storehouse of knowledge of that which is misleading. So let's get out the broom.

The following are all pertaining to s.s.b. and the reason for the telling will appear later. The immediate following will also be of interest to the a.m. man. I begin by discussing carriers.

"Is my carrier narrow?" is a question you often hear asked. Or, "I checked your carrier and it's really nice and narrow" . . . etc. But a carrier has no width. If my carrier appears wide on your receiver it is because your receiver is broad! Now don't cut down my antenna—wait until I finish. A carrier has no width. This is fact. How can a carrier be on 3.8 and 3.7998 at the same time? It can, of course, if it has parasitics. Then it'll probably be on 144 megs. as well. It's like the old story, how wide is a point? The carrier is less than a point. **The width of a carrier is a measure of your receiver selectivity.** A Collins 75A4 will make it quite a lot less than a ZC1 or a crystal set for example.

Now, having disposed of that one, let's discuss modulation. The books say that modulation is the process whereby the **amplitude** of the transmitted wave is varied in accordance with the waves impinging on the microphone. Fiddlesticks! Modulation is nothing of the sort. How can one convert amplitude of a voice, and frequency of a voice, both to amplitude modulation? How does one sort out which variation is frequency and which is amplitude at the receiver? What we really do is generate new carriers at the sides of the main carrier! And I'll prove that.

Rig yourself up a tone osc. of say 2000 cycles and modulate a low power exciter with it. Put the receiver on and turn on the crystal filter to its sharpest position. If you tune across the tone modulated signal and if your filter is sharp, you will pick up three carriers. None will be modulated by a tone! If there is tone modulation you are receiving more than one of those carriers. One is beating against the other and producing a third—the tone. You won't be able to make this test with a crystal set. And, incidentally, the tone must be a pure sinewave or else the harmonics will beat with each other and produce a tone. **Modulation is a process which produces new carriers at each side of the main carrier.**

* Reprinted from "Break-In," April, May, 1958.

● Upon request it has been decided to reprint a series of articles that appeared in "Break-In" last year explaining sideband operation to the Amateur who has not, till now, delved into this most interesting mode of transmission. Later it is hoped to publish some articles on the practical side of sideband operation from VK Amateurs.

This is not f.m. F.m. varies the main carrier about its datum line. A.m. produces new carriers, removed in frequency to plus and minus value, from the main carrier. Of course there are some who manage to combine the two, f.m. and a.m., but they're smarter than I am.

S.s.b. means that the main carrier and the bunch of carriers out one side have been removed. In other words, you have suppressed the carrier and one sideband. If you like you can remove one sideband but leave the carrier and the average fellow won't know the difference from a.m. This is because the carrier (assuming our tone modulation again) is beating with the sideband and producing the tone. If both sidebands are there the tone will be louder because each is beating with the carrier and the results are adding together. **But they will only add together if the phase is correct.** You know what happens when you get phase distortion through atmospherics gumming up the process of propagation and reception. The same thing happens when you endeavour to transmit double sideband without carrier. Unless you get that little old carrier back in the correct phase, brother you have trouble. So the answer is, get rid of one sideband.

Now I have inferred that the results will not give as many S units on the receiver as double sideband and this would normally be correct were it not for the fact that removing one sideband leaves a little more room in the final to accommodate more of the one sideband that is left. You give the final half as much work to do so you make it work twice as hard! More or less. I could prove this not quite right, but I said I would not use maths. It's near enough.

Near enough for the purpose of explanation is the following: You have a 100 watt a.m. rig. 66 watts of that input is used up making that little old carrier. 16½ watts goes into one sideband and 16½ goes into the other. If you own a 75A4 with the 3 kc. filter aboard, you get the 16½ watts of whichever sideband you are listening to. If you're using a ZC1 you get the 33 watts. But if you're transmitting 100 watts of single sideband you're getting the 100 watts. Now you know one of the reasons I sold the a.m. outfit.

I did use a few figures just then. We'll try a metaphor: For some reason or other which I won't enter into for fear I get locked up, I wish to convey movement from one side of a lake I have on my property, to the other side.

I climb down the bank on this side and whack-hang out of the water with an oar. Ripples flow across the lake—right over to the other side—and shake about a float which I had previously put there and so wave a flag or ring a bell or otherwise indicate that I should be locked up. That little old lake is 100 feet deep. It's too deep: I might drown, so I shift camp. Now the lake is a foot deep. Has it made any difference? No, it hasn't. It'd still work if I ran across with a basin full underneath each ripple so long as I didn't get stuck in the mud. That water is our carrier, the ripples the sidebands. Actually in s.s.b. we even go one better. We take away all the water and only put it back at the other end when the ripples arrive. There are other reasons for using s.s.b. but they will make themselves more apparent later.

Removing the carrier is simple. If you get a push-pull r.f. amplifier and connect the plates of the two tubes in parallel you will suppress the carrier. This is the same as a push-push circuit save that the coils in the grid circuit are tuned to the same frequency as the plate. The two plate currents flowing in opposite directions cancel each other out. But if you would modulate this suppressed carrier you merely need to modulate in a parallel mode. If you modulate in a push-pull manner, you will cancel out the modulation. You've probably seen the set-up ("A.R." Aug. 1957) which converted a Command transmitter to do the job. It is very simple.

Just to be different, the s.s.b. boys call this a balanced modulator. There are other forms of it which we'll meet later, but they work in the same manner.

You may remove the sideband merely by pushing the signal through a sharp crystal, mechanical or inductive filter. Or alternatively, by judicious phase-shifting of the carrier and sidebands you may cancel out one sideband in a manner somewhat similar to the way you cancel out back radiation from a beam antenna.

Both methods are cheap and simple. Only the lack of familiarity makes then appear frightening.

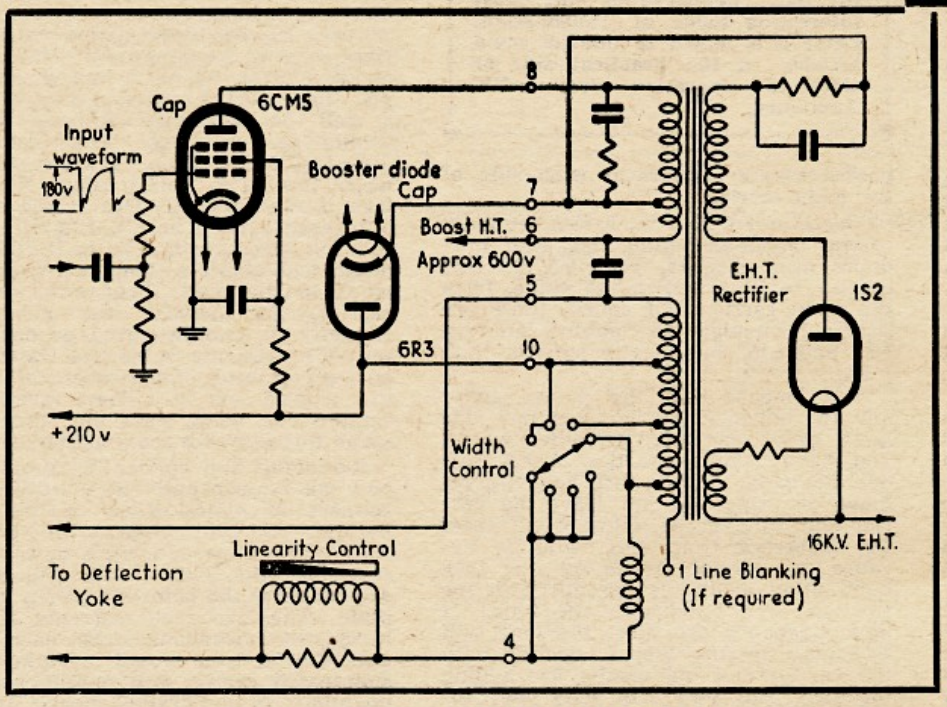
Now I will deal with receivers and explain why it is s.s.b. signals are "hard" to tune in, how to make them easy to tune; why it is s.s.b. signals do appear to take up half the band on many receivers, and how various adaptors work to make tuning easy.

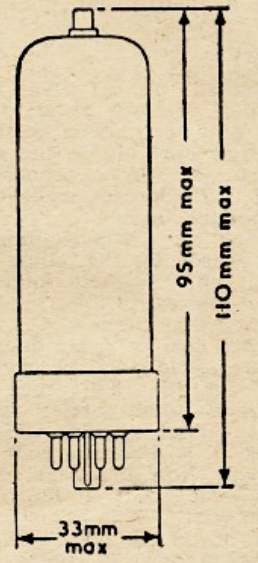
HOW TO COPY S.S.B.

The reception of s.s.b. signals is perhaps the most difficult part of the whole s.s.b. business unless of course you possess one of the commercial receivers designed for this job. Make the reception side of s.s.b. easier and there will

Mullard
TELEVISION VALVES

6CM5
LINE OUTPUT PENTODE





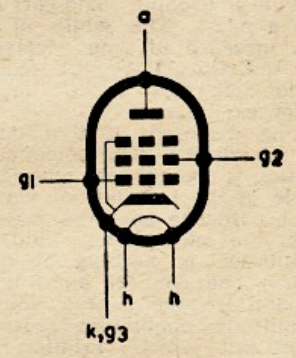
6CM5 CHARACTERISTICS

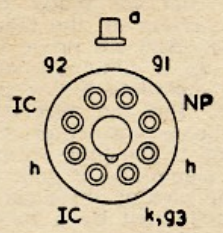
Heater ratings — *6.3V at 1.2A*

TYPICAL OPERATING CONDITIONS 90° DEFLECTION

Anode Voltage Supply (alternative Voltages)	200V	225V
Anode Voltage Boost	460V	472V (Approx.)
Total D.C. Supply	660V	690V (Approx.)
Screen Grid Voltage	200V	225V
Grid Input Voltage (pk to pk)	145V	145V
Anode Current (D.C.)	110mA	85mA
Screen Current (D.C.)	30mA	28mA

The 6CM5 is a television line output pentode having anode and screen dissipation ratings of 10 watts and 6 watts respectively. Peak anode voltage ratings of 7.0 kV positive and 3.0 kV negative together with a peak anode current rating of 350 mA ensure its suitability for 90° deflection systems with EHT voltages of the order of 18 kV. The reserve margins available ensure long service life. Additional data is available to design engineers on request.





Octal Base

ISSUED BY THE TECHNICAL SERVICE DEPARTMENT M63X

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be few people left on a.m. This is no wishful thinking on my part but actual fact being borne out right now in the United States where receivers are being designed first for s.s.b, a.m. being almost an afterthought. For those who are sceptical, remember that almost all Government services throughout the world are changing over to s.s.b. I can't see Governments spending large amounts of money for the hang of it.

There are various ways and means by which you may improve the reception side of things, but first I must stress the most important facts of all. **Your receiver must be stable.** If your receiver is not stable and you are not prepared to do anything about it, you had better forget the whole business. Your receiver must stay stable. And, equally important, **you must have a slow tuning rate on the receiver.** Remember now, you need to tune in with only cycles error. Once you have mastered this you will find the a.m. standards of stability shocking to an extreme. Begin with the **front end osc.**, not the b.f.o. Usually it is the front end osc. that is the culprit re stability because (a) it works on a higher frequency, and (b) it has switched circuits and various non-high stability components in its make-up. And (c) it may be a combination tube in which case it is subject to a.v.c. variations and also heat from its fellow. (d) The mechanical stability is poor.

Dealing with the last (d), the answer there is obvious. If you can't get this better, the original design being poor, you had better scrap the project and begin again. Just as the t.r.f. became obsolete, so now is the conventional superhet. going the same way. Today's standards are high. Assuming you are able to make the osc. section rigid so that it may be lifted **when the b.f.o. is on** without causing more than a few cycles' change in note, **when the note is a low one**—say 50 cycles—you are in business. Now stabilise the local osc. and b.f.o. power supply with a VR tube. The lower the voltage the better. Next, replace any condensers around the osc. sections with high grade micas. Make certain resistors are not cooking; they should be of such ample rating that there is no heating whatever. Disconnect the a.v.c. from the mixer tube if it is a combination tube. Keep the heat away from the local osc. and b.f.o. components.

Now to a discussion on that ticklish subject s.s.b. splatter. It is unfortunately an inescapable fact that s.s.b. does cause splatter in many receivers. This though is not necessarily the fault of the transmitter. In fact I have no hesitation in saying that most of the s.s.b. signals on the air in this country are good ones. There are a few poor sigs just as there are in a.m., but usually they are building phases and are soon put right. The s.s.b. boys usually take care to mention to one of their fellows whenever he is splattering.

Splatter in the receiver, that was not transmtited, may be due to the following: Overload of the receiver a.v.c. This is a very common cause. What happens is that the time constant of the receiver is not able to cope with the shotgun bursts that are speech and as a consequence the receiver is just as overloaded as it would be on an a.m. signal with the r.f. gain right up and the a.v.c. off. If your a.v.c. won't work then you must resort to the manual a.v.c.—namely, the r.f. gain control. On the 75A4 even, one has to turn down the r.f. gain to copy s.s.b. You must cut the legs right off that s.s.b. signal until it fits the receiver. If in doubt, turn the audio gain right up and use the r.f. gain as a loudness control. Incidentally, quite magically, you'll now find that signals are easy to tune.

Splatter at the receiver may also be caused due to lack of b.f.o. injection. If you don't put back enough carrier, **you over-modulate the signal in your own receiver** (and most likely blame me). The answer here of course is to increase the b.f.o. injection and as above **keep down the r.f. gain.**

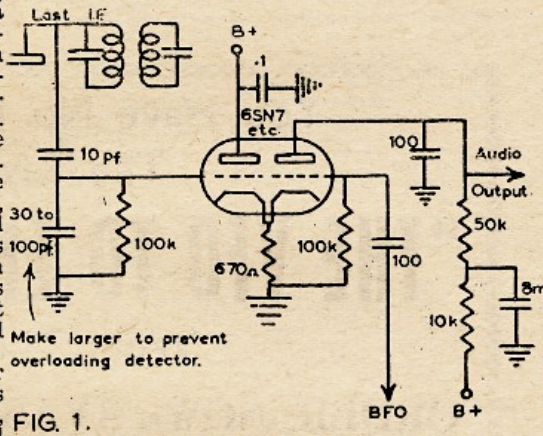
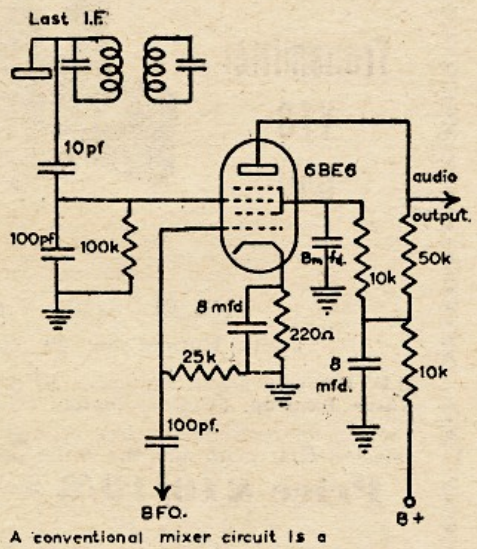


FIG. 1.

This product detector is fitted to many American receivers, and is an excellent performer



A conventional mixer circuit is a product detector as can be seen here.

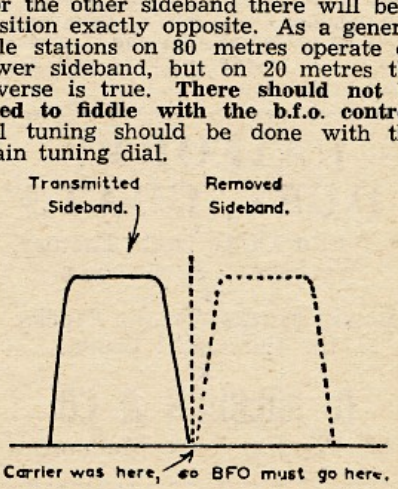
And now, if you spend a little time on the tuning rate of the receiver, either by mechanically bandspreading it or alternatively by say adding a small trimmer across the local osc., you're going to be able to read s.s.b. just as you would a.m. As a guide, my own receiver has two tuning rates. One, the slow rate, takes 125 turns of the knob to cover the band 3.5 to 4.5 megs. and the other 25 turns. This I would say is an ideal rate. The three-gang condenser with its associated worm from an ARC5 receiver (Command), when bandspread to cover one band, gives a nice tuning rate. If you are not able to get a tuning rate approaching this, then tuning s.s.b. will always be a hectic sort of business. **When an s.s.b. signal sounds like an a.m. station and tunes in without fuss or hesitation, only then are you doing the job correctly.**

Many people think that a product detector is the end-all to s.s.b. copy, but without the essentials mentioned above, it is useless. A product detector is just a fancy name for a mixer or a converter. There is little difference between a product detector and the mixer in the front end of your receiver. In this case the b.f.o. is the local oscillator and the i.f. frequency is in the audio range. All other constants and component values may be the same. Just bear in mind though that coming at the tail end of the i.f. strip instead of the beginning, there will be so much gain the detector will more than likely be overdriven.

Fig. 1 shows the circuit of a cathode follower type product detector that is used in many American receivers.

There are two main advantages in using a product detector. (a) The injection voltage from the b.f.o. is no longer critical as with the diode detector, and (b) there will be less QRM because the output will only occur when a signal beats with the b.f.o. A measure of whether or not the detector is functioning correctly is to turn off the b.f.o. when the output should be negligible. If there is output possibly the input is too strong and rectification is taking place on the grid. A.m. signals to one side will appear as duck talk which does make it far less annoying and also explains why it is a s.s.b. station often has trouble copying an a.m. station who breaks in on the channel a little off zero beat. Only if he is zero beat will his speech be readable.

There seems to be considerable confusion regarding the correct tuning of the b.f.o. The correct procedure depends to a certain extent upon the selectivity of your receiver. If the receiver is broad, it is probably better to set the b.f.o. to the centre of the pass band. But for a sharp receiver this is certainly not the case. **With the b.f.o. off, put the receiver in a very sharp position and tune for maximum loudness of the duck talk.** Only then, turn on the b.f.o. and clear the speech. If that position is marked that will be the position to which you should always set the **b.f.o. for that particular sideband.** For the other sideband there will be a position exactly opposite. As a general rule stations on 80 metres operate on lower sideband, but on 20 metres the reverse is true. **There should not be need to fiddle with the b.f.o. control.** All tuning should be done with the main tuning dial.



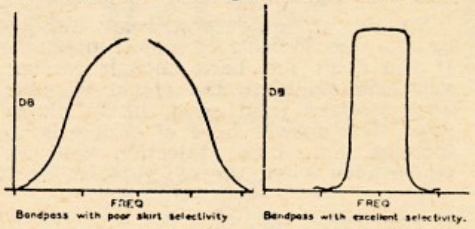
Another method of reception which has considerable merit when the receiver stability and tuning rate is poor is the method known as front-end injection where a frequency meter or other stable osc. is used to supply the carrier. With this the a.v.c. may be left on and the station tuned as for ordinary a.m. once the frequency meter has found the station. This method does give a little trouble with stations of varying strength, but on the other hand does allow you to tune the band without having to retune the s.s.b. signal. It is, though, at the best, a cumbersome method and this will be brought home very fully once you have tuned a decent receiver using the other method.

There is one further point which deserves ready mention and which mainly the s.s.b. boys seem to fully realise, and that is one of selectivity. 3 kc. is all that is necessary to copy any **good** a.m. or s.s.b. station. More than half the a.m. stations I listen to suffer with f.m. and therefore are a problem. By turning on the b.f.o. and listening to the one sideband only you will find weak signals considerably improved in copy so long as there is no f.m. present. And if the receiver is sufficiently sharp you may remove the carrier and reinsert your own as you would for s.s.b. and also flick from one QRM'd sideband to the other where copy may be better. This is known as selectable sideband reception and on modern receivers using what is known as a slicer or narrow passband may be effected merely by turning a knob or pressing a switch.

The low frequency ARC5 (or BC453) is readily converted for selectable sideband reception whether for a.m. or s.s.b. Copying a.m. with the b.f.o. on is known as exalted carrier. A.m. stations will find these methods of great advantage when copying weak signals down in the noise or affected by phase distortion. It is often of great advantage to make an s.s.b. signal of the a.m. signal right in the receiver and then of course reinsert the carrier with the b.f.o. The b.f.o. will be steady and the phase immaterial. Many diehard a.m. stations, though, were they to hear themselves unwittingly delivering duck-talk would no doubt give up Ham Radio altogether.

A word about selectivity. A.m. and s.s.b. stations, in the light of crowded band conditions and the advent of s.s.b., should make every endeavour to get 3 kc. selectivity in their receivers. This is, of course, quite a tall order, especially when it is considered that to be of use, the receiver must also have good **skirt selectivity.** That is, you must be either tuned to the station or not tuned to it. There should not be a position where the volume falls off as you tune yet the copy remains near perfect.

Poor skirt selectivity means that the s.s.b. station working **alongside the station you would copy will work your a.v.c.** and generally play havoc with the receiver. You of course will blame the transmitter, yet on a good receiver it is often a surprise to find that it is possible to fit in another station between the two and without actually overlapping. With good skirt selectivity it is possible for two groups of s.s.b. stations to work on the same **carrier frequency**, one group on the lower sideband and the other on the upper, but neither group QRMing the other.



Bandpass with poor skirt selectivity. Bandpass with excellent selectivity.

With this to think about and perhaps envy, I'll leave you till next month when I hope to begin on the generation of s.s.b., but eventually will return to the reception side of things for whatever we do on the generator is applicable to the receiver in the interests of greater selectivity.

CQ, CQ, CQ AUSTRALIAN AMATEURS DE THE FEDERAL EXECUTIVE

BY THE FEDERAL PRESIDENT OF THE WIRELESS INSTITUTE OF AUSTRALIA, G. M. HULL, VK3ZS

Recently I made a tape recording, on behalf of the Federal Executive under the direction of the Federal Council of the W.I.A., which many of you heard played and re-played over the official Divisional stations of this Institute.

By popular demand, I have been requested to provide the script for publication in "Amateur Radio" so that those who were unable to listen to the broadcasts can read it for themselves. In the printed word, I shall qualify some remarks from the original recording and also add some other information which has since become available.

My prime object in arranging the recording is to place before you certain facts relating to proposals being placed before the International Telecommunications Union which could affect the frequency allocations existing at present for use by the Amateur Service, and to also let each and every one of you know the details of the case which the Federal Executive of this Institute submitted to the Postmaster-General's Department in defence of the existing Amateur bands for and on behalf of the Amateurs of Australia irrespective of whether they belong to this Institute or not.

Before I proceed with the more important part of what I have to say, let me give you a very brief outline of what the I.T.U. does insofar as its activities affect our hobby and where we fit into all this business of frequency allocations and radio services.

Well before World War II. the Governments of the day were well aware of the potential behind communications facilities such as those afforded by radio methods and the power they held in their hands for purposes of speeding up messages—to use a very simple term—and for propaganda and political transmissions to other countries. Even at this time the bands were becoming crowded and it was realised by most countries that something would have to be done to allocate frequencies on a world wide basis so that all services could adequately operate with as little interference to the same services in other countries insofar as that was possible.

Even in the 1930's this was a formidable task, but briefly, it was carried out by what is now known as the International Telecommunications Union (the I.T.U.), and up until the outbreak of World War II. we Amateurs had retained reasonable frequency allocations and most of us were happy with what we had. Of course at this time there were less than 1,500 Amateurs in Australia, nowhere near as many transmitting services and generally—looking back at it all in retrospect—not very much to grizzle about, even though the Amateur frequency allocations had been pruned at the Cairo Conference in 1935.

Well, the main function of the I.T.U. was to bring about agreements between all countries which would permit the equitable sharing of the entire frequency spectrum on an engineering basis. By this was meant a design to break the spectrum up into sections—commencing at the low end with broadcasting services on up through the shortwave spectrum with shortwave broadcasting services, maritime mobile and fixed services, aeronautical services, amateur services, and so on into the v.h.f. and u.h.f. regions.

In the first place this was roughly arranged for the then existing services, but with the advent of World War II. and the great impetus resulting from it in the way of advanced techniques—particularly in the v.h.f. and u.h.f. regions—the aftermath left complete chaos with all countries operating all sorts of services anywhere and everywhere.

As you all recall, when we Amateurs were re-licensed in Australia we received most of our bands back over a period of time as the frequencies were released from use by military and other services. We never obtained the 200 metre band back, which is perhaps understandable to some extent in a country like Australia with its vast areas. From memory, I recall that there were something like 5,000 applications for broadcasting station licenses by private organisations after the war. The applicants were not all fortunate, but an inspection of the frequency table today shows that not only is this part of the spectrum completely allocated on a basis of a 10 Kc. separation between stations, but many channels are shared between geographical locations which could not normally interfere with each other's transmission.

Some of we older Amateurs regretted the loss of this band for this was virtually the only band by which the general public knew what Amateur Radio was all about. Very few members of the general public listened to shortwaves—today hundreds of people do—and the Amateur service is recognised by them as operating in the shortwave and v.h.f. bands. Just from the interest point of view I would like to say to the younger Amateurs that this 200 metre band was not an open band for use by any licensed Amateur. Applications were granted to only a few Amateurs and they had to operate very much under broadcasting station conditions, pay royalties on all records played, keep proper station logs and records—all of which was quite an expensive business. I have wandered off my story a little here, but it is very interesting to read of the earlier days in Amateur Radio. An era when there was no such thing as disposals equipment—Amateurs mostly made their equipment, even the microphone.

But let's come back to 1947 and the Atlantic City Conference of the International Telecommunications Union. This was probably the largest Conference ever held to determine an engineering basis for the world-wide allocation of frequencies which encompassed all the services added to our way of life emerging from World War II.—greatly expanded airway services with their complex transmitting equipment, radar both on ships and aircraft, advanced maritime direction finding and communications equipment, larger requirements for expanded army, navy and air force ground, sea and air communications; frequency channels for dozens of domestic services such as taxi-cabs, radio telephone, fire fighting communications both city and country, fishing craft and many others. All these services in 1947 which didn't exist pre-war! Without some form of International control and agreement between countries there would have been no answer to the chaos and confusion which would have existed today. As technical men, we cannot close our eyes to these facts. No longer can we rest on our laurels of the past as the men who pioneered the shortwave bands and because of this should have what we wanted in the frequency spectrum. To any logical thinking person such a plea cannot stand in the way of scientific progress, gall and all as it is to all of us who remember the earlier days. We have to contribute something greater to the world if we are to retain our place in the scheme of things. We shall have to contribute still greater things if we are to hold what we have left now.

In my mind there was one saving grace resulting from the 1947 Conference, and that was that the Amateurs of the world were recorded in the Minutes of that Conference as "the Amateur Service" and for the operation of which were laid down certain specific radio regulations. Don't confuse these regulations with the domestic regulations laid down by the Postmaster-General's Department under the Wireless Telegraphy Act—they are a different thing altogether. Atlantic City laid down that Administrations—by this they mean the Governments of countries—would provide frequencies for the Amateur Service. I would like to quote you, from the Minutes of the Extraordinary Radio Administrative Conference held in Atlantic City in 1947, two regulations which give us international status as recognised frequency users as distinct from the category of domestic frequency users.

Regulation 31—**Amateur Service:** A service of self training, intercommunication and technical investigations carried on by Amateurs, that is, by duly authorised persons interested in radio technique solely with a personal aim and without pecuniary interest.

Regulation 56—**Amateur Station:** A station in the Amateur Service.

These two regulations unquestionably record the Amateur service as an internationally recognised service for which our frequency requirements are considered on a world-wide basis.

ATLANTIC CITY CONFERENCE 1947

The case for the Amateur at Atlantic City was undoubtedly won due to the efforts of the Radio Society of Great Britain and the Amateur Radio Relay League. Australia's case was in the hands of the Postmaster-General's Department who were expected to protect our requirements at the same time as the interests of other commercial frequency users who conceivably could, and did, want the same frequencies. Where then was our strength? I would say we had none! If it hadn't been for the work of the R.S.G.B. and the A.R.R.L. I doubt if there would be any Amateur Radio today. Commercial interests are not interested in Amateurs when frequencies are involved. Sure they probably give preference to them in employment where their qualifications are satisfactory, but then this is a logical procedure since Amateurs are at least partially trained on the average—some of course study in pursuit of higher technical qualifications—and their natural bent for experimentation makes them a more suitable employee where they take positions in the electronic field as their pursuit in life rather than having Amateur Radio merely as a spare-time hobby.

When I say we had no "strength" at Atlantic City, I do not infer that the individual officers of the Australian Delegation did nothing about Amateur requirements. What I do mean is that the W.I.A. did not have a representative there to observe and advise on all the facets of Amateur service communication requirements which are peculiar to our work and upon which we are naturally more knowledgable.

TECHNICAL ADVANCE

After World War II., the technical advances were so great that the average Amateur was technically lagging the field, whereas in earlier days it could safely be said that the Amateur was technically as advanced as his commercial counterparts. No longer could the Amateur rest on his laurels as having pioneered the shortwave bands. He had to do something of more public worth than just experiment of frequencies from 80 to 10 metres. All the experimenting on these bands were an accomplished fact. Certainly they afford the means of teaching newcomers the practical side of transmission and reception. Certainly these bands leave a small area for experimentation such as in single side band technique, frequency modulation, pulse—but the commercial people were well abreast and ahead on these techniques. In 1947 the Amateurs' technical standing was meaning less and less in the ever-widening field of electronics and as I see it our existence since has depended on the powerful case put to the I.T.U. at Atlantic City by the R.S.G.B. and the A.R.R.L.

In speaking frankly, I do not want to convey the impression that I am siding with the commercial viewpoint. Far from it! I am trying to convey to you a realistic picture. We must forget our attitude of mind that we owned the bands first, therefore they shouldn't be able to take them away from us because of this. Today such a defence is too weak. It is insufficient to stand in the way of progress.

From the Atlantic City Conference came the Frequency Allocation Table to which the majority of attending nations were signatory, some with variations more lenient to the Amateurs than Australia. Australia carried out this agreement to the letter, which I am afraid was not the case with many other countries, as listening over our bands for the past ten years or more has proved to us all. At this Conference we lost part of our 80, 40 and 20 metre bands—on the other hand we gained the 15 metre band which has proved, and is still proving to be, an excellent band for our use, but it hardly compensated for the losses in our most popular bands. Don't ask me why we lost so much when countries like America

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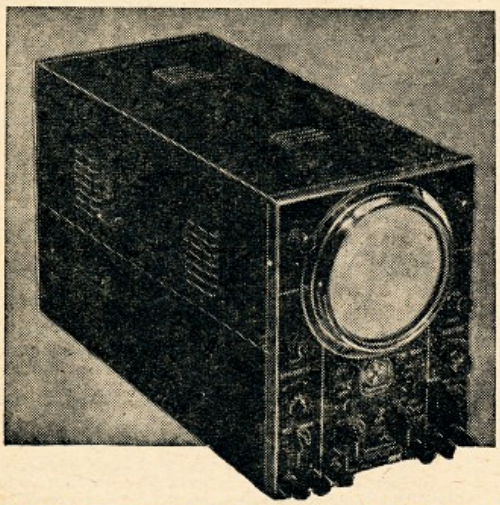

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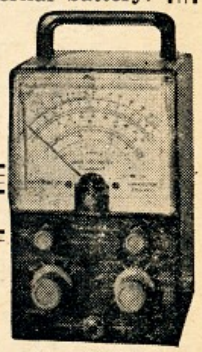

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and England retained more; countries which have a far greater communication density and infinitely greater interference problems than we do in Australia. I don't know! Nobody really knows! As I have said, we were not there to hear and see for ourselves. The R.S.G.B. and A.R.R.L. were! Can we deduce that these two societies, because of having representatives there, were able to see that their case was presented as thy wished it to be—or was it merely coincidence.

Members of the Federal Executive—past and present—have studied the overseas trends for a long time. We have listened to all kinds of reports from different qualified persons who have been overseas at both minor and major conferences, but we have never felt satisfied at any time that we have the full picture of what goes on and why. For years past we have interested ourselves in various matters which might have seemed rather remote from the Amateur service. but which have combined to give us a more realistic picture of the gradual change which has continued to take place in the sphere of radio communication. In our minds it hasn't been a very heartening picture.

W.I.A. REPRESENTATIVE TO GENEVA

But it culminated in a unanimous desire that at the next I.T.U. the Institute must have its own representative there to see and hear for himself what makes an International Telecommunications Conference "tick"; to "feel" for ourselves the atmosphere and activity which has brought about this change; to gain absolutely first hand information on where the Amateur stands in the future and how much international standing the Amateur service has in the world today; to find out for ourselves how Governments represent the Amateur service requirements; and in justice to the Amateurs in Region III support the two major Amateur interests from Region I. and Region II., who—if reports are correct and we have no reason to doubt otherwise—played such a vital part in saving for us the frequencies which we have all had the privilege of using in pursuit of our great hobby for the past decade.

Having made up our minds the matter was placed in the hands of the Federal Convention last year, which unanimously supported us. The result—you all know. We were instructed to raise the funds and send our own representative with or without official accreditation. We have advised you all through your Federal Councillor of the means by which we decided to finance the project and the approximate sum of money we would require. You have all received a circular letter and a donation card asking for £1—a sum which we considered small enough to ask for in an effort to have something really active done about protecting our hobby. Many hundreds of you have willingly supported the fund; many have gladly contributed much in excess of what we asked for although we would have been very happy if 3,500 Amateurs had merely paid £1 each. There are many who have not yet contributed and who we are hopeful will do so before the fund closes. With the expenses of printing, paper, postage, etc., deducted, the fund currently stands at £1,800. Many of those who have already contributed have offered to contribute more if the target figure of £2,500 is not reached, but we feel sure that those who have not contributed will not let their brother Amateurs pay his way for him.

Well now, after the fund was opened, this Executive went into action to obtain official accreditation for the W.I.A. representative to attend the Conference with the Australian Delegation and this was agreed to by Mr. Davidson, the Postmaster-General. This was most gratifying to us for it gives our representative official standing and that was the way we wanted it to be. You have all been advised that John Moyle, VK2JU, was chosen as our representative and we are sure you will agree that a better qualified person would be difficult to find in every sense of the word. John has the technical know-how, administrative experience, writing and speaking ability above average and a solid background of Amateur operating and W.I.A. administration—all of which are surely the abilities we require in the man who goes to Geneva on behalf of us all. We don't envy John the job of work he has to do, but we know he will put his heart and soul into it as he has done with any other activity he has undertaken during his years in the field of radio communication.

BROADCAST FROM VK2WI AT DURAL

VK2WI broadcast a short talk from John on the week-end during which his name was released, and I would like you to read the text of a recording taken at Dural at that particular time.

"As you know now, the Institute has honored me with selection to be its representative at Geneva next year. I don't need to tell you how much I appreciate the significance of this selection. I am well aware of the fact that it is probably the most responsible task which has been given to a member of the Institute to date, bearing in mind the international implications of this very important occasion. I don't mind telling you, also, that when it was first suggested to me that I might nominate for the position, I didn't take it very seriously. I couldn't imagine that there were not others more qualified than I would be for this particular job. However, as time went on I gave the matter more consideration and finally I did agree to have my name submitted and was fortunate enough to be selected by Federal Executive.

"The importance of the representation at Geneva is very definitely in my mind. I can assure you that I fully appreciate the responsibility involved in it. This is the first time the Government has recognised the Institute in this way, and it is probable, too, that no other representative at Geneva will be there under quite the same conditions.

"I don't want to say a great deal for obvious reasons at the moment, but it does seem to me that there are three major things which make this visit to Geneva so important.

"The first is that, although so many of the matters which make up the Government's proposals will be worked out before the conference begins, it is a conference, and there will be many discussions and possibly changes of mind which could affect Amateurs. It is absolutely vital that we have somebody with an Institute background on the spot to do what he can should the occasion arise.

"The second thing is that this is only the beginning of another 11-year period which will elapse before the next conference, and I think every Amateur in Australia realises that we should begin to organise now for what might happen after Geneva. We have never had a representative at such a conference to find out exactly what goes on and to report back with the basis of a case for the future. I think that is extremely important, not only for ourselves, but to enable us to carry on the necessary negotiations with other bodies which influence Amateur Radio to see that at all times our interests are protected.

"The third point, as I see it, is the opportunity provided to discuss Amateur matters with representatives of other societies who will be at Geneva. This is possibly as important as the other two, because it ties itself to the Amateurs' position in the future on a worldwide basis. I think we must all realise that, whatever happens at Geneva, what might happen 11 years from now could be almost anything. A united front in understanding the problems and position of Amateur societies and other countries of the world is vital to us, particularly because of our comparatively isolated geographical position.

"Let me say again that I am fully appreciative of the honor that has been accorded to me, and to assure you that I will do everything in my power to see that the interests of the Institute are adequately represented at Geneva."

I am sure you will agree that these words are indicative of what we can expect of John from Geneva.

Talking of Geneva, brings me to the most important points of this talk to you. First let me give you a brief outline of how the agenda for these Conferences are produced. Every country naturally has its own particular frequency allocation problems and its demands are dependent to a large extent upon its area and population; to some extent upon its terrain; its shipping and airline establishments; its geographical location with respect to its neighbors; its fixed services; its mobile services, and so on. The more civilised it is, the more services it has, and so the more frequencies its frequency users say they require. As I said before, these have multiplied themselves beyond belief since World War II. and as we see it will go on doing so. Looking at the bands from the Amateur point of view, we rightly consider that "miles" of the bands—to use a coloquialism—are needlessly taken up with useless jamming stations, propaganda broadcasting to which the utmost minority of the world population would listen, all sorts of telegraphy stations which do not seem to transmit anything for hours on end except some identifying signal, and sometimes not even that—in fact as Amateurs used to going on the air and making useful contacts, testing new transmitters, aerials, receivers, and all the rest that goes with it; learning something every time we do so and passing it on to others—one sometimes wonders why our bands suffer when all these "miles" of frequency space doesn't seem to be occupied at all. Unfortunately, such observations help us not at all. To such talk is leaned a deaf ear all over the world in every country.

PROPOSALS TO THE I.T.U.

All these various frequency users are only interested in one thing—their own requirements! And to this end they will fight for what they want. So why shouldn't the Amateurs! We have no specific details of how many foreign countries present the requirements of their frequency users to International Conferences, but in a few minutes I shall tell you how Australia does it. Suffice it to say that these requirements are initially presented by each Administration well in advance of the Conference itself. The staff of the International Telecommunications Union set all these requirements out without any variations whatever—they have no power naturally to vary such requirements at this stage—in a large volume which is called "The Volume of Proposals." The name is self explanatory. The volume lists the entire frequency table in the various agreed service sections of the spectrum —maritime, aeronautical, amateur, fixed services and so on—against which is listed the requirements of each country. A copy of this volume is forwarded to every Administration prior to the Conference and so every country knows beforehand what the other countries intend trying to have agreed to at the actual Conference. Australia's proposals have already gone. But let me point out one very important point. All these requirements as set out previous to the Conference are, as the volume says, **merely proposals**—proposals which might never get through the Geneva Conference. They are, as I said before, the requirements of all the countries. They say they want these frequencies on behalf of their frequency users and they are telling every other country in advance to give them a chance to relate these requirements to their own and everybody else's. It all sounds very nice and simple doesn't it. But after that the fun starts.

When each country receives its copy of this **"Volume of Proposals"**, its Administration will go through it with a fine tooth comb and compare its requirements alongside all other countries. From this, the Administration will obtain a reasonable idea as to what hope its requirements will have of being agreed to wholly or in part by the majority of other Administrations. By the way, this term I use, "majority", does not infer that the majority decision will necessarily be carried out automatically by those who oppose it. There are all sorts of variations, compromise agreements by groups of countries, frequency sharing and staggering agreements which result. All this is ultimately reached by weeks and weeks of discussions and arguments by small working groups dealing with various portions of the spectrum and/or individual frequency user services. It's all very complex, but out of it all seems to come some form of frequency table—in itself quite complex—to which all signatory nations are expected to agree as from the date of its implementation, which might be a number of years after the Conference.

As we know to our sorrow, some countries don't stick to their word. Some countries don't sign an agreement on certain proposals or amended proposals in the first place. Some countries don't vacate a given band when they agreed to—the date they agreed to. In any case, whatever variations in frequencies are agreed upon all countries are given a period of time to make the change which might involve very high costs in many instances.

THE AUSTRALIAN SYSTEM

Now I mentioned before that I would tell you about how Australia presents its initial requirements which are included in this "Volume of Proposals". As I said, I don't know how other countries go about presenting their's, but in Australia we have what is referred to as the F.A.S.C., which stands for the Frequency Allocation Sub Committee. This Committee, as well as making decisions regarding domestic frequency users' requirements, also carry out the work of providing the initial proposals for the International side of Australia's communications. It consists of representatives from the Postmaster-General's Department, whose representative usually chairs it, the Department of Civil Aviation, the Overseas Telecommunications Commission, the Australian Broadcasting Control Board, the Communications Directorates of the Army, Navy and Air Force, and the Department of Supply.

This Committee meets for all kinds of discussions which rarely in the past have been vitally related to Amateur affairs. Nevertheless, the Institute sought representation on this Committee on those occasions when Amateur matters were to be discussed.

Members of the Federal Executive attended the relevant meetings and were very dissat-

isfied with various aspects of the procedure adopted by the Committee in dealing with certain proposals which concerned Amateur frequencies, some details of which I shall give you in a moment. In the first place, of course, not being members of F.A.S.C., we had no vote. The agenda being discussed was **confidential**—we couldn't even take a copy from the room—and all matters contained in and arising from it were sub judice at that stage. A previous letter from the Department requesting proposals for the Amateur service had been received and the request was that this be in the hands of the Department at a much later date than these particular meetings of F.A.S.C. The draft was being prepared, but could not be completed in time for the F.A.S.C. meetings for which we consider it should have been requested. We immediately expressed our concern to the Department and requested that the Institute's proposals be re-heard by F.A.S.C. in view of the confusion created by the Department's letters and lack of knowledge of the agenda under discussion by F.A.S.C. By this time our document of proposals was completed and filed with the Department well ahead of the date scheduled by the Department. Our request was tabled before the F.A.S.C. at a meeting some time later and although we were given the ear of the Committee for more than an hour, the meeting refused by vote to re-open discussions on frequency proposals on the grounds that if they re-discussed Amateur frequencies, other frequency user representatives would have the right to request that their case be re-heard and so the whole frequency table would have to be gone over again.

However, I must say in all fairness that we were given a fair hearing during the discussions at the meetings we attended, although we hadn't completed, at the time, the figures we wanted tabled. I can also say that even if we had had the power of a vote it would have made little or no difference to the final motions which were passed.

From various comments I have heard made by Amateurs at different times, it appears to be the general opinion that if we lose any frequencies, the Postmaster-General's Department is responsible for taking them off us. I am far from siding with the Department, but in fairness I must point out that this is far from the truth—in respect to current proposals anyway. Remember this Committee consists of the largest frequency users in the Commonwealth and it is they who moved motions for certain reductions in our bands. Certainly the Department chaired the meetings, but there was no instance where the Chairman had a casting vote, hence my earlier remark that commercial interests (and we probably all loosely refer to commercials as any frequency users outside the Amateur bands) are not concerned with the poor old Amateurs when it comes to frequency requirements. Already in possession of more frequencies than they seemingly require, they still press for more. As I sit and talk to you here it may all sound very simple for the Institute to present a powerful case for the retention of Amateur frequencies —confronted by representatives with powerful cases for increased frequency bands, it's not as easy as you think. Don't think we put up a weak case, far from it! We put the Amateur case as strongly as possible I can assure you, even to the point of gaining support from certain members, but overall we lost some ground. From it all we saw more and more reason why we were right in taking steps to send our own representative to Geneva. More and more we realised that we must—without equivocation of any kind—see and hear for ourselves what America, England, New Zealand and all the European countries had to say at Geneva.

For the past five years we have told Conventions, both State and Federal, that the pressure would be great at the next I.T.U. Never more truly were words spoken. We were not taking the attitude that this would probably be the case—we knew it would be! We told members through Editorials and Convention minutes that the Amateurs must organise themselves to provide communications networks for civil and national emergency, that they must use the bands, that they must give themselves all the publicity they could through every possible channel, that they must organise their Divisions to provide a technical service to the public wherever it might be needed—in fact to realise that they had to provide more from Amateur Radio than just a hobby where one can rest on one's laurels and bask in the glory of the wonderful pioneering the early Amateurs carried out and for which they were at the time highly commended and respected. Time, I'm afraid, stands still for no man and if we don't all take a firm hold of what we have left we won't have anything to hold on to at all.

USE THE BANDS

Gentlemen, I am not being pessimistic. I am optomistic on the contrary despite the gloomy present. If other frequency users can fight for what they want, we can too. But it's no good the captains fighting without the team behind them.

When I say fight, I don't mean we intend to make our problem a personal issue with members of the Australian Delegation, some of whom administer the Amateur regulations. Not at all. I use the word "fight" in the broad sense of the word as a "stand" which the entire world of Amateur Radio is taking to see that the Amateurs' case is heard by the Geneva Conference. In our case the W.I.A. representative has been appointed as an observer adviser to his country's delegation and as such he is going there for just that—observe and advise. And he will be responsible to see that the liaison between the Australian Amateur and his Administration is not only maintained, but broadened.

We are faced with the prospect of further frequency cuts. Right now we are faced with a loss of 100 Kc. off the top end of the 80 metre band. We are faced with another loss of a further 50 Kc. off the 40 metre band. We are faced with a third loss of 50 Kc. off the 20 metre band. It is proposed that all other bands be left as they are at present.

There is the thin edge of the wedge as we see it, but don't you let history repeat itself for it will if we don't make a stand and fight it out with our bigger brothers, the A.R.R.L. and the R.S.G.B. They are faced with the same pressures as we are from commercial frequency users, make no mistake about that. The W.I.A. proposals take up sixteen pages of foolscap typed. A copy has gone to your Federal Councillor. I want you to read it—all of you. Ask your Federal Councillor to make arrangements for it to be read at a meeting. If you, as a member, have anything to say about it, say it whether critical or otherwise. We have done everything possible to establish grounds for the retention of our bands on the same basis as the commercials apply—density per kilocycle and density per channel. That's the way the commercials claim frequencies, so that's the way we did it. And as a recognised international frequency user, the Amateur service has a right in the world of communications. He's being forced to fight, so he's going to fight, but let's back our fight! **Let's use our bands!**

Gentlemen, the monitoring stations and the radio inspectors haven't been idle. Neither have other frequency users. You try sitting in front of a Committee like F.A.S.C. and be told the percentage of stations operating in the 80 metre band any time of the day or night over a 12 month period and think up an answer fast. We did! Sit there and be told the 40 metre band was monitored for twelve months, night after night, and then recall an R.D. Contest to your mind as compared to all the other nights in the year, then find an answer. We tried! Sit there and be told by radio inspectors who have for the past twelve months or more checked almost every Amateur in the Commonwealth, how many Amateurs had call signs but no station for the inspector to inspect, and see if you can come up with a good strong, powerful excuse! We tried!

Sit in front of representatives from commercial frequency users and tell them that the Amateurs provide a nucleus for semi trained electronic personnel, that they provide emergency communications several times a year for fires and bloods or lost hikers, and find a powerful enough answer when they say, "but during such emergencies you only need certain fixed frequencies, don't you?" Gentlemen, I am not being melodramatic. That's only a very brief sample of many questions arising from discussions at meetings like we attended. We found answers—and arguments. And we pushed them for all we knew. The result will come out of Geneva. But remember, what went to Geneva were **proposals only.** Such proposals must be agreed to by many countries; perhaps not necessarily all, but a lot otherwise such bands would be of little use to Australia. So don't give up chaps, the fight hasn't started yet.

EXTRACT FROM HANSARD

Since making this text as a recording, I have learned that the W.I.A., as the representative body of the Australian Amateur service is not alone in making an effort to preserve the rights of the Amateurs. The Hon. A. Fairhall, M.H.R., Federal Member for Paterson in N.S.W., and himself an Amateur, had something to say in the House of Representatives during the Address in Reply debate in the House on 18th February and I am pleased to reprint from Hansard what he had to say:

"There is one other matter to which I wish to refer in this field, or a related field. During this year there will be in Geneva a periodical meeting of the International Telecommunications Union. This is a body that meets periodically to carve up, as it were, the radio frequency spectrum, and to make laws for the orderly use of radio communications in all their forms. The normal drill is for us to send forward to Geneva our proposals. They will there be integrated with those of all the other signatories to the International Telecommunications Union Agreement, and then returned for consideration and for the preparation of the brief which our delegates will take to Geneva. In the broad field I am not so terribly concerned, because these are matters for departmental consideration, and I am sure they will be dealt with very well. But I want to raise here a voice on behalf of a group of persons whose interests may very well be overlooked, because they do not usually come to public attention when these matters are being considered.

"I refer to the 3,500 operators in this country of Amateur experimental radio stations. These people are fully qualified by examination to operate their stations. They run them on a basis of international communication, and they therefore offer a potent source of development of good international relations. Since World War I. they have always enjoyed the use of certain radio frequencies, but inevitably, in the course of time, as the pressure of commercialism in radio has grown, so the channels available have become severely restricted. Today I believe they are almost down to the minimum required to encourage more people to undertake this activity. These operators occupy, I believe, a very important place in public esteem. I well remember what happened during the last war with relation to defence communications, and the history of the role played by Amateur Radio operators has not been adequately stated. Before war-time these Amateurs were operating as reserves for the Royal Australian Air Force, and the members of the radio reserves were the first into the Air Force when war was about to break out.

"When we went into the war, Australia had no substantial communications industry. We had one or two factories which were aware of the problems of making transmitters. The rest had been making receivers. An immediate call went out for technicians for the factories, laboratories, design establishments and assembly plants, and ultimately the operation of much of this equipment fell to Radio Amateurs. In every disaster that has struck Australia, the Radio Amateurs have done their part in providing communications, as I am sure they are doing in North Queensland at the moment, taking up where ordinary communications break down. Our expeditions to the Antarctic take with them Amateur Radio operators. These people, who train themselves in their own time and at their own expense, have rendered, and are rendering, very special service to this country.

"I know that the proposals affecting Amateur Radio operators, which involve some review of their frequency channels, have already been dealt with departmentally and may indeed be in the submissions which have gone to Geneva. I have asked to have a look at those, and I should like to study them in due course. In the meantime, I urge the Government to consider this problem very carefully. It is true that 3,500 people do not speak with a very loud voice in this country, but I believe that we ought to recognise the service that they have given and are capable of giving to the nation and that this problem should be approached constructively, and I am sure that it will be regarded as one that merits sympathetic consideration by the Government.

"There is one other important aspect of this matter, Sir. The Governor-General's Speech referred to developments at Woomera. We all know—those of us who have read something about what is going on there or who have been there—that, without electronics, there could be none of this development and no modern weapons, and that, indeed, there can be no modern defence without the widespread use of electronics. This group of people who occupy themselves in something that is more than a hobby are contributing to the building up in Australia of a vast pool of trained technicians who are ready to take up, even at short notice, as they did in 1939, the technical support of Australia's defence.

"I would end on that note, Sir. I urge the Government to consider very sympathetically indeed the preservation of all the facilities which the Radio Amateurs in Australia enjoy today, and perhaps even some minor extension, if that is possible, by international agreement."

(Continued on Page 19)

1958 VK-ZL DX CONTEST RESULTS

AUSTRALIA

C.W.—

Call	10	15	20	40	Total
VK2ADE	3660	5850	4060	1580	15150
2GW	3505	3405	4295	1275	12480
2JX	4610				4610
2AKF	775	1785	1445		4005
2VN			1535		1535
VK3AHQ	1635	5540	3115		10290
3DQ	1690	3235	3115	525	8565
3XB				1525	1525
VK4AL	1950		4470		6420
4SN	1205	1005	265		2475
4XJ	2425				2425
VK5NO	3700	4430	3275	265	11670
5MY		4230	2725		6955
5WO	2505	2235	1500		6240
5RX			3815		3815
5BS	815	2705	55		3575
5JE				1255	1255
5OR			1185		1185
5JT	140	285	265		690
VK6RU	4780	5450	4260	255	14745
VK7CH	1715	2345	3780	540	8380
7JB	2040	1795	2465	425	6725
7KA		3780	1820		5600
7LJ	575	1710	1120		3405
VK9DB	5325	5075	3660		14060
9XK	2305	1940	1550	710	6505
9RR		3000	2320		5320

PHONE—

Call	10	15	20	40	Total
VK2ADE	1345	5205	1055	495	8100
2AHH	1485	4235	775		6495
2AKF	880	2310	1530		4720
2AKV	720	755	895		2370
VK3HW	3220	4915	1735		9870
3AEE			4070		4070
3VF	1365	2620			3985
3HL	1755	410	1185		3350
3AJP			920		920
3LW		625			625
VK4XJ	3280				3280
VK5WP	1795	1640	1155		4590
5WO	330	1530	940		2800
VK6RU*	2995	3330	3795	100	10320
VK7WA		2120	1360		3480
7SM			1275		1275
VK9BW	1350	785	2280		4415

* Total includes 100 points on 80 mx.

Check Logs: VKs 4AF, 5NO.

LISTENERS' SECTION—

VK2—L2022	10775 pts.
VK3—BERS195	1480 „
VK5—SWL5020	1240 „
L2001	1090 „
VK6—L6003	4275 „
VK7—De Balfour	6255 „

NEW ZEALAND

C.W.—

Call	10	15	20	40	Total
ZL1AH	4390	5570	4295		14255
1AJU	5050	4840	3135		13025
1NG	2450	4005	4150		10605
1MQ	3495	2535	3010	1535	10575
1APM		6865			6865
1AMM	1605	2350	2415		6370
ZL2ARL	1125	2090	635	805	4655
2IQ		1660	1530	55	3245
ZL3OB	1655	2350	2225	100	6330
ZL4AT*	1680	2795	5810	1030	11475
4BO		5850			5850
4CK			2375		2375
ZL5AC	575	1760	1170		3505

* Total includes 160 points on 80 mx.

Check Log: ZL1AV.

PHONE—

Call	10	15	20	40	Total
ZL1MQ	1840	2660	1415	110	6025
ZL2RT	1750	3200	385		5335
2AHZ	215	2465			2680
2IQ		300	110		410
ZL4BO		4055			4055

Check Logs: ZLs 1AJU, 2ADS.

LISTENERS' SECTION—

DX37A	8100 pts.
ZL111	1750 „
ZL152	Check
ZL304	
ZL302	3030 pts.
ZL4 (Thornton)	5660 „

OVERSEAS

C.W.—

North and South America

	Pts.		Pts.
W1WF	210	W8BHW	5940
W2GJD	2236	W8OOR	162
W3ZAO	1850	W8YGR	Check.
W3DBX	1102	W9ZTD	2010
W3JO	221	K9ALP	666
W3BVN	112	W9KXK	504
W4NBV	4255	W9WCE	456
W4IFN	350	K9ELT	99
K5LIA	3472	W9FNX	9
K5JCC	98	K0ITF	2116
W6GHM	10241	W0YCR	1652
W6TT	7426	VE7ZK	1178
W6IPH	3922	VE1EP	270
K6DDO	3094	VE3JZ	28
W6KG	1736	VE2AHW	1
W6YVO	1596	KL7MF	288
W6ISQ	1512	KL7CTG	35
K6CQM	1140	XE1CM	1
W6BJH	154	CO2US	408
W6CLZ	104	CX9AJ	120
W7LEV	2240	CE3AG	2844
W8JIN	6601	PY2AC	735

Europe

	Pts.		Pts.
G5RI	2046	SM7MS	6
G5HZ	1885	SM5OW	4
G6XN	1885	OH3TH	858
G2DC	756	OH9RD	230
G8QZ	50	OH2LA	80
G3GXO	40	OH2RW	64
GM3EOJ	665	OH2HG	63
GM3EDU	135	EA2CR	45
GM3EHI	20	DJ1BZ	2352
GW3AHN	312	DJ2AE	756
HB9MO	988	DL1YA	Check.
HA5BI	72	F2BS	176
HA5DH	42	F3II	77
HA5BU	4	F9BB	9
HA5KDQ	1	ON4PA	680
HA8KCU	1	ON4LX	360
PA0VO	1066	OZ4FF	432
PA0LOU	96	OZ4RT	45
PA0LU	88	OZ1JW	Check.
PA0CF	77	UB5KAB	160
PA0TAU	54	UR2BU	108
PA0LY	4	LA4K	72
PA0VDV	Check.	LA1K	63
OK1LM	840	LA2Q	16
OK1EB	24	OE1ER	1081
OK1AEH	9	OE1RZ	828
OK3EA	Check.	SP3HL	1080
OK1CX	Check.	SP7HX	152
OK1KCF	Check.	SP6KBE	112
SM4AEQ	310	SP6RT	56
SM5CCE	120	SP8MJ	1
SM5ATK	40	EI9F	4
SM7TQ	20	UC2CB	16
SM5DX	12	UF6FB	1
SM5AHJ	8		

Oceania

	Pts.		Pts.
KX6BT	1820	KH6DS	425
KH6IJ	880	FK8AS	4

Africa

	Pts.		Pts.
CR7LU	192	VQ2RG	528
ET2KY	512	VQ4KPB	20
FA8RJ	126	ZS6IX	28

Asia

	Pts.		Pts.
JA1VX	4320	JA0AN	88
JA2JW	2310	JA1WU	42
JA3JM	1642	JA1BSO	1
JA1AS	714	HS1C	220
JA5AI	374	KR6JF	275
JA9GO	171	MP4BBE	6

PHONE—

North and South America

	Pts.		Pts.
K2UTC	6	TI2OE	36
W4NBV	406	HK7LX	527
W4EEO	9	CX3BH	138
W6YMD	11610	CX2CO	2
W8JIN	1525	OA4V	180
W8NXF	1080	LU6MV	360
W9ZTD	180	LU5AR	15
K9ALP	120	CE3HL	1000
VE2AHW	1	PY2AC	171
CO2ZS	2002	PY5GA	99
HR2MC	405		

Europe

	Pts.		Pts.
G3GYH	1365	SM3BIZ	112
G6XN	940	SM3EP	105
G3LYT	84	SM4AEQ	96
G3AQY	60	SM5ZO	Check.
GI3IVJ	665	SM7CAB	Check.
GM3EOJ	392	ON4BX	1152
GW5SL	1272	ON4DH	336
GW3AHN	512	OH3TH	4
PA0HBO	252	OH6DM	4
DJ3VM	1276	SP7HX	66
I1ZFT	208	SP3PL	9
EA3JK	66	UR2BU	299
SM5TR	448		

Asia

	Pts.		Pts.
JA2YT	828	KR6JF	429
JA1AS	377	MP4BCC	192
JA3JM	189	VS1GZ	156
JA5FT	1	4X4JS	78

Africa

	Pts.		Pts.
ZS5OA	630	VQ2RG	108
ZS5PG	112	CR7LU	25

Oceania

	Pts.		Pts.
FK8AS	3565	KH6IJ	420
JZ0PB	550	KX6BT	66

LISTENERS' SECTION—

England:	
BRS20317	2320 pts.
BRS15822	1018 „
BRS6604	920 „
A1622	54 „
JA2—1014	60 „
HL—5001	286 „
K2—7079	220 „
YO2—476	473 „
SM5—2735	330 „
SM4—2825	230 „
OE9CZ	210 „
ONL559	300 „
OK2—3947	288 „
OK1—25042	252 „
OK3—9280	195 „
OK1—1840	36 „
OK1—3074	Check
HE9EVI	432 pts.

NATIONAL FIELD DAY CONTEST, 1959

AWARDS

Section A, Single Operator:

1.—H.F. Portable-Mobile—
VK3DY, D. V. Scott .... 229 pts.
Extra Awards to:
VK3LC, A. W. H. Chandler 184 pts.
VK3ADW, D. A. Wardlaw 176 „
VK5LC, L. E. Catford .... 152 „

3.—H.F. Fixed Station—
VK2ASZ, R. L. Lear .... 76 pts.

Section B, Multiple Operator:

1.—H.F. Portable-Mobile—
VK3WI, VK3 Division .. .... 275 pts.
Certificates also to:
VK3OM, R. Fisher.
VK3RN, R. Higginbotham.

Section C, Receiving:

1.—Portable-Mobile—
D. Grantley, WIA-L2022 .. 214 pts.

2.—Fixed—
Miss Joyce Martin (VK5) .. 36 pts.

LOGS

New South Wales Division:

Section A(1)—
VK2ARZ .... 67 pts.
2GJ .. .. 65 „

Section A(3)—
VK2ASZ .... 76 pts.
2AHV .... 56 „
2ACB (check log).

Section B(1)—
VK2AAH } .. .. 32 pts.
2AIA }

Section C(1)—
D. M. Grantley .... 214 pts.
R. Thompson .... 28 „
D. W. Shepherd .. .. 14 „

Victorian Division:

Section A(1)—
VK3DY .... 229 pts.
3LC .... 184 „
3ADW .... 176 „
3CN .... 85 „
3ZM .. .. 77 „
3WM .... 71 „
3ADL .... 61 „
3PZ .... 60 „
3AHG .... 37 „
3JO/5 .... 7 „

Section A(3)—
VK3XB .... 46 pts.
3AUL .... 20 „
3PW .... 15 „
3LW .... 12 „
3AXU (check log).

Section B(1)—
VK3WI .. .. 275 pts.

Section C(1)—
J. M. Hilliard .... 21 pts.
I. D. Thomas .... 18 „

Queensland Division:

Section A(1)—
VK4TF .... 49 pts.
4HZ .... 34 „
4ER .... 24 „

Section A(3)—
VK4TW (check log).

South Australian Division:

Section A(1)—
VK5LC .... 152 pts.
5XM .... 36 „
5AV .... 33 „

Section A(3)—
VK5JO (check log).

Section C(1)—
Miss Joyce Martin .... 36 pts.

Western Australian Division:
Nil entry.

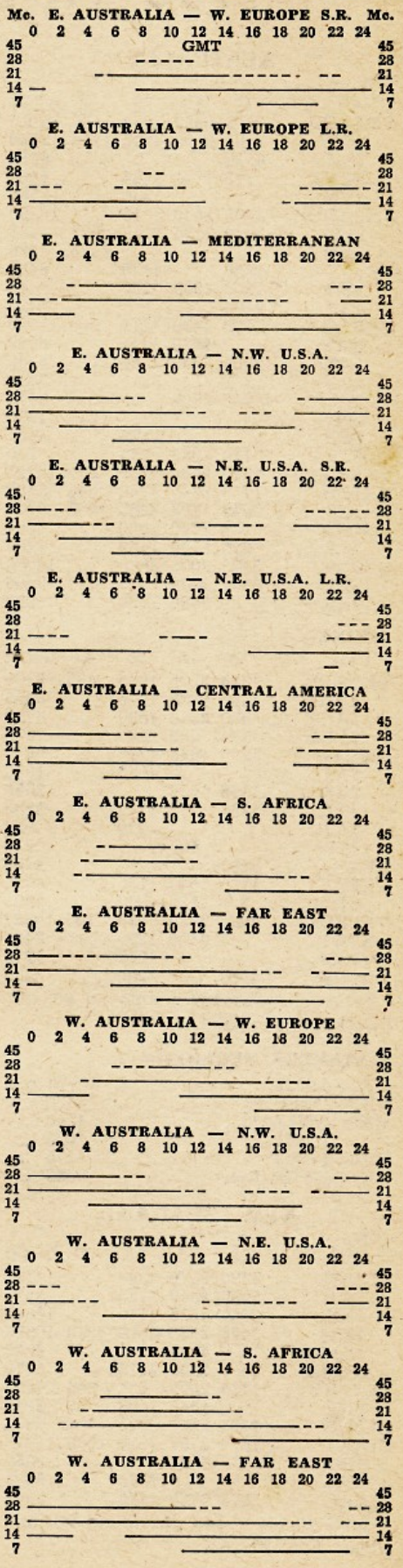
Tasmanian Division:

Section A(1)—
VK7JB .... 84 pts.

Section A(3)—
VK7RY .... 29 pts.

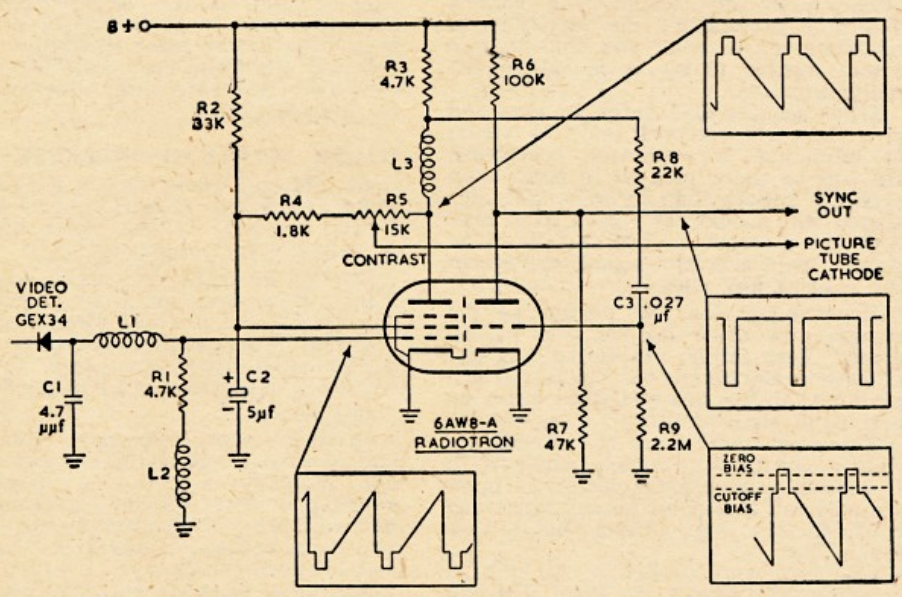
New Guinea Division:
Nil entry.

PREDICTION CHART, APRIL '59



RADIOTRON
TELEVISION VALVE SERIES

The Radiotron 6AW8-A is a 9-pin miniature high-mu triode, sharp-cutoff pentode designed for service in television receivers. Although the triode section is primarily intended for use as a sync clipper, it can also be used in other functions such as sync amplification, sync "splitting" or audio amplification. The pentode section is intended for use as video amplifier, and features high transconductance at low plate current, sharp-knee plate characteristics, and low inter-electrode capacitances. These features give a video amplifier a high figure-of-merit and make it capable of large voltage output. The output of the 6AW8-A video amplifier provides direct drive for conventional picture tubes.



Simplified Circuit Showing Typical Application of the 6AW8-A.

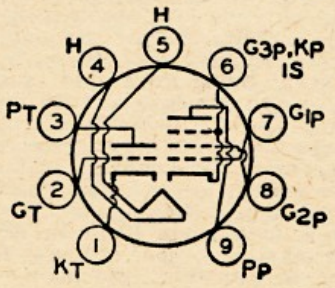
In the typical circuit shown above, the negative-going composite video output from a conventional video detector is applied to the control grid of the pentode. The amplified positive-going signal across the pentode plate load, R3 and L3, is applied to the cathode of the picture tube via a suitable potentiometer arrangement which serves as a contrast control. L3 is the plate peaking coil.

The positive-going composite video signal is also applied to the grid of the triode. Grid current during the sync tips charges C3. Between sync pulses, C3 loses a very small amount of its charge through R5. Thus the sync tips are "clamped" at approximately zero grid potential. R6 and R7 form a divider to supply the triode with a suitable plate voltage. Plate-current cutoff ensures that the clamping level of the composite video signal at the grid is below control grid cutoff. Thus the triode plate current is derived from the sync pulses only. The amplified negative-going sync signal appears across the triode plate load, R6 and R7, and can be applied to a sync amplifier or splitter.

6AW8–A

SOCKET CONNECTIONS

bottom view



PIN 1: TRIODE CATHODE
PIN 2: TRIODE GRID
PIN 3: TRIODE PLATE
PIN 4: HEATER
PIN 5: HEATER
PIN 6: PENTODE CATHODE, GRID No. 3, & INTERNAL SHIELD
PIN 7: PENTODE GRID No. 1
PIN 8: PENTODE GRID No. 2
PIN 9: PENTODE PLATE

SHORT WAVE LISTENING

BY D. M. GRANTLEY,* WIA-L2022

MUCH has been written in the past on the subject of Short Wave Listening, however, for some unknown reason very little seems to be available when a new s.w.l. decides to break into Amateur Radio. With the formation of more Listener Groups in this country, and a greater number of interested listeners on the Amateur frequencies, I have been prompted to write a few words, in the hope that they may be of some assistance to some of our newer listeners.

CHOICE OF RECEIVER

The variety of receivers available to the general public through disposals and other sources is great and rather varied. Some of these pieces of equipment are somewhat complex, having a multitude of crystal filters, bandspread, noise limiters, and many such aids to easier listening. To the beginner, these "aids" will not be of any assistance to him should he require to become a first class operator, for they tend to make him lazy and make him place too much reliance on their use. This applies particularly to the code operator, who will find that having used an elaborate receiver since he first started, will not be able to operate through heavy QRM when he has no device to assist him.

During the war-time training of the R.A.A.F. telegraphists, we had a host of artificial interference of all types fed into the oscillator during some of our training periods and, although we did not appreciate it at the time, we certainly appreciated it when we went out into actual operating conditions. We commenced on the old faithful—R1082, a receiver which is long obsolete, then graduated to AR8s, before graduating to the more complex AR7, SX28, BC-342N, HRO's, Super-Pro's and such. The R1082 was a five-tube t.r.f. receiver with a coverage of 110-15,000 Kc., and was predominently a c.w. receiver. They were ideal for training, as they had only a reaction control, gain, tuning and antenna tuning. Nothing else. When I came back to Amateur Radio in 1952, I had not taken a symbol of morse for six years, yet with this little plain receiver I did very well. I still have it here, and it would still be in use, only for the fact that it is of no use on r.t. Even at this late stage, I still use only a very austere receiver, a No. 19 and converter and it is quite adequate, even in the worst "dog-pile."

LOGGING

Little attention is paid by many operators to their log, yet the log book is of the greatest importance, specially where the operator is chasing awards. I use the standard W.I.A. log book, but use a separate one for each band with the exception of 80 and 40 metres. This makes it easier for reference. Make sure all entries are accurate and put a query alongside any doubtful entry.

* Mount Raven, Holbrook, N.S.W.

REPORTING

This is the most abused section of Amateur Radio. For some unknown reason, many operators consider it a gross indecency to give other than at least a 579 report, no matter how bad the incoming signal happens to be. I entirely agree with the Editor of "A.R." in the September editorial wherein he comments on the recently completed R.D. Contest.

I was checking my contest log prior to mailing it and particularly noticed that of some 400 entries, only one showed less than R4, the strength was rarely lower than 6, whilst the tone in most cases was 8 or 9, despite the fact that in more than one case the true tone was, in my opinion, about the 6 mark. (I might add here that I concentrated on phone in this contest.)

I suggest to the s.w.l's. who can receive code that they pay particular attention to any forthcoming contest and note particularly the variations in reports given to what you consider the actual reports to be—it is rather enlightening.

When sending QSL cards, be sure and give the correct report, don't be afraid of offending the operator concerned. He will be more pleased to receive an accurate report than a false 599, designed only to extract a card from him. And don't forget to add a "C" if he suffers from a chirpy signal, or "K" in the case of key clicks.

Reverting to the "R" portion of the report, how often do we hear an R3 given? Very rarely, yet not so long ago I heard a 559 given, the op. then complaining of the heavy QRM. How he arrived at his readability I do not know.

This may sound more like a criticism than a constructive article, however it is written to give examples of mistakes we may fall into if we do not pause and consider our log entries before we make them.

One final word on behalf of our hard working QSL Managers. Print that call sign carefully on your outgoing cards; saves him a lot of time and unnecessary hard work.

RARE DX

There can obviously be no hard and fast rule about hunting for those rare DX stations. Sitting for long hours at the receiver is all very well for general listening, but I have found that most of my good ones are caught at the least likely moments. I often go into the shack to do an odd job and as a matter of course, on goes the switch, quite often resulting in a rare one on the hook. Often he escapes and if such is the case, I make a note of the time, band, etc., and pin it on the wall in front of me, then at a later date I usually manage to catch up with him.

Also on the wall I have a chart giving me the main world times at a glance. This enables me to use the local time of a station when writing out the card, a job which I do when I actually log the call. This saves a lot of time at a later date.

I also keep a card index showing the call of all stations to which I have sent cards, date, band, emission and whether or not they have replied. Included in this index are cards for stations which I know refuse to reply, or any special remarks of any interest.

GENERAL LISTENING

A good operator will log anything he hears, but I must confess that for a long time I refused to log the more common calls such as W, ZL, and the more common Europeans. However, now that I have discovered a few listener awards which are about, I log anything and everything, regardless who, where, or on what band. This is easy, but for anybody wanting operating practice, I recommend some of these DX dog-piles. Hop in and try to sort one out, I assure you there is no finer way of getting code practice other than logging some of the better class VK operators who, it is regretted, emerge from their hiding place at contest time.

I log all times in local "K" time, converting to their local time when I fill the QSL out.

OTHER POINTS OF INTEREST

An old call book can be a valuable index system, the Christian name of the station licensee, written beside his call is valuable for reference.

During the R.D. and local contests, I used it to save me a lot of time in checking to see if I had already logged a station on a particular band. By using a distinctive mark for each band I could tell at a glance if I had previously logged him.

Another gadget here which causes no end of amusement is an old car mileage indicator—a valuable asset for keeping an accurate count of countries heard. I have also a complete rig here which is battery operated for use in case of power failure.

At times when I want to listen on one band which is rather sick, I connect a single can from each set to the headphone bracket, enabling me to monitor one band and listen to another —an old R.A.A.F. trick.

As previously stated, this article is written primarily for the benefit of our younger members and I sincerely trust that it may be of some assistance to them as they take part in this wonderful world-wide hobby of ours.

SOLID STATE RADIO FREQUENCY AMPLIFIERS

(Continued from Page 4)

7. "Operation of a Solid State Maser," H. Scovil, G. Feher, H. Seidel, Phys. Rev. 105, 1957, p. 762.
8. "Solid State Maser Amplifier," A. L. McWhorter and J. W. Meyer, Phys. Rev. 109, Jan. 1958, p. 312.
9. "Inherent Noise of Quantum Mechanical Amplifiers," M. W. P. Strandberg, Phys. Rev. 106, 1957, p. 617.
10. "Spontaneous Emission on the Noise Figure of Maser Amplifiers," R. V. Pound, Ann. Phys. 1, 1957, p. 24.

MEET THE OTHER AMATEUR AND HIS STATION

RON HUGO*
VK6KW

RON Hugo is a West Australian by birth and upbringing and his association with Ham Radio extends to pre-war days. He passed his A.O.C.P. in 1938 and became active on 10 metres working W DX with a W8JK beam.

During the war, Ron served in the A.I.F., first in radio, and later in a radar unit. On the re-issue of Amateur licences in 1946, he returned, working 10 and 20 metre DX.

Main interest in Ham Radio now is DX. On the constructional side, Ron has always been interested in receiver building, and until recently, has always used a home-brew receiver. In fact, his shack is still, with this one exception, completely home-brew.

In the photograph, from left to right, are home-brew Geloso v.f.o., 6146 buffer, HK257B final transmitter, 811s class B modulator in same cabinet; AR88D receiver; behind the operator is a control panel which includes selsen compass indicator and monitoring c.r.o. On extreme right is a modified 522 for use on 144 Mc.

The antenna system consists of a 6GU beam for 10, 15 and 20 metres, and Wyndoms for 80 and 40 metres.

Ron has been very active in W.I.A. affairs, having been both President and Treasurer of VK6. For the past few years he has been Federal Councillor. He is also President of the Radio Society of Perth.

Other hobbies include 8 mm. cine photography.

* 8 View Street, Subiaco, Western Australia.

CYCLONE "CONNIE" VISITS QUEENSLAND

You all remember "Bertha" last year, April 1 (see Emergency, "A.R.," May, 1958) and the trail of damage she left in her wake. Well, this year her sister was born and soon became a husky howling infant that soon grew up and exceeded her sister "Bertha" in fury.

Time, 1010 hours, 16th February. "Connie" certainly getting frolicsome and trying her hardest to grow up in a hurry.

Bob VK4RW called CQ on 7050 Kc. and was answered by Percy VK4PC and later VK4MF came into the net. Percy was given a blow-to-blow description of the velocity of the wind gusts as they passed VK4RW's shack and headed towards VK4MF.

At 1218 hours the power lines came down and VK4MF and VK4RW were off the air. Percy thought the worst had happened. VK4MF had several blackouts of power during the afternoon and VK4RW came on again when the power was restored at 5.30 p.m. VK4WI came on and the emergency net stood by while he called in and collated reports from the various Amateurs from Atherton in the North to Sarina in the South, assisted by operators in various towns further South.

Unfortunately, the cyclone crossed the coast around Ayr and Home Hill and did tremendous damage, and decided to give a final twirl at Bowen, just to show the people there they were not forgotten and that "Connie" was more forceful than "Bertha" last year. The damage she created far exceeded previous years.

The two Amateurs in Ayr and Home Hill were unable to come on the air and give first-hand reports. (Maybe they should be given assistance to obtain emergency power supplies.)

Next day, 17th, reports of damage began to filter through. The emergency net grew larger as "Connie" moved further South, losing intensity, but bringing rain and floods in her wake.

At 6.23 p.m. the official station VK4AA was heard asking where VK4PW, at Collinsville, had got to as communication had been lost with that town like last year. All took turns in calling VK4PW, but no luck as VK4PW had folded his tent a fortnight earlier and shifted to Mackay. He came on at 8.30 p.m. from his new QTH and announced the fact that VK4ZO should be on c.w. A call was given over the Broadcast Stations and Jim popped up on 7090 Kc. crystal controlled on c.w. but conditions were too difficult for VNT to pass traffic to him. A golden opportunity was missed after sterling performance of VK4PW last year.

The W.I.A. in Brisbane can be truly proud of the way the various Amateurs called in during the two days to offer their services. Had the official channels been totally disrupted we were there to help out.

Assistance of VK2WI and VK7WI in vacating the 7050 Kc. channel was appreciated. VK2WI shifted to 7040 Kc. to receive reports from the Northern River Districts of that State.

Seventeen Amateurs were logged at this QTH in the net. Well done, chaps. Your assistance was appreciated.

Do not forget our motto: "Always be ready."

—R. K. Wilson, VK4RW.

The following has been extracted from the Queensland press:

Ayr and **Brandon**.—Of a total of 320 houses damaged, five were completely demolished, 12 half demolished and 50 lost 50% or more of the roof. A rough estimate of damage to houses is £100,000, and to business premises £30,000.

Home Hill.—This town appeared to have suffered the most severe damage. The shopping centre was very severely damaged. Shop windows and awnings disappeared and many shops collapsed. At least 20 houses were demolished and there was very extensive damage to many others. Damage was estimated at £150,000.

Bowen.—Twenty-eight houses were completely demolished, about 200 suffered major damage, and 250 some minor damage. Damage estimated at £100,000.

Some information concerning damage to the towns of Proserpine and Mackay and districts gives a somewhat similar picture, although the damage appeared to be less as the cyclone had abated somewhat.

Unofficial estimates in the hands of the Commonwealth Government place the total cyclone damage in Northern Queensland at £2,000,000.

TECHNICAL ARTICLE AWARD

The Publications Committee has pleasure in announcing that the Technical Article Award for 1958 has been made to Mr. E. E. Cornelius, VK6EC/T, for his series of articles on Amateur TV.

The Committee was gratified with the high standard of technical articles submitted during the year and looks forward to continued support in this matter.

AMATEUR CALL SIGNS

FOR MONTH OF JANUARY, 1959

NEW CALL SIGNS

VK— **New South Wales**

2AI—R. L. Brook, 64 Donnison St., West Gosford.
2HT—H. A. Harris, The Manse, Brighton Le Sands.
2LB—F. M. Basden, Flying Doctor Service, Broken Hill.
2AAY—W. S. Yarrington, 458 Lane Lane, Broken Hill.
2ACB—B. E. Bollek, Sutton, via Queanbeyan.
2ALW—H. J. Weatherley, 20 Sebastopol Street, Marrackville.
2AUT—G. Taylor, 2 Brande St., Belmore.
2ZEA—J. W. Ashley, Loughnan St., Coolamon.
2ZGH—G. H. Hodder, 5 Barwin St., Forbes.
2ZKL—K. B. Larkin, 15 Countess St., Mosman.
2ZMD—M. C. Darby, Tathra, Spring Ridge.
2ZRR—R. Roberts, 20 Inglis St., Kotara.

Victoria

3OP—R. L. Brentwood, 23 High St., Mont Albert.
3OV—G. A. R. Pearce, 207 Prospect Hill Rd., Surrey Hills.
3PE—R. R. Elkin, 273 High St., Prahran.
3PH—W. J. Hewitt, 8 Shelley St., Wendouree.
3PP—C. J. Buckley, 18 Robina Rd., Eaglemont.
3QX—N. Campbell, Broadmeadows Hostel, Camp Rd., Broadmeadows.
3ADB—D. L. Bradford, 22 Knox St., Reservoir.
3AGZ—H. H. Goodman, 66 Wellington St., Kew.
3AHA—K. J. Hartigan, Sidonia, via Kyneton.
3ANS—A. N. Sinnbeck, Station: 182 Buckley St., Footscray, Vic.; Postal: 5 Wick St., Deniliquin, N.S.W.
3AQC—P. R. Ladd, 33a Murphy St., Sth. Yarra.
3AQL—C. W. Harwood, "Rosebank," South Kyneton.
3ASS—East Sale R.A.A.F. Radio Club, R.A.A.F. Station, East Sale.
3ZAF—P. Furr, 33 Princes Highway, West Warrnambool.
3ZBC—K. Connelly, 214 Warrigal Rd., South Oakleigh.
3ZBR—J. F. Ryan, Residence No. 352, R.A.A.F. Base, Point Cook.
3ZGM—P. Milne, 20 Wilmoth St., Northcote.
3ZGW—J. G. Fricke, 14 Gurner St., St. Kilda.
3ZHC—G. Collings, 2 Ashburton Rd., Glen Iris.
3ZHD—G. C. F. Dillon, 4 Scott St., Beaumaris.
3ZHG—J. Clark, 13 East India Ave., Nunawading.
3ZHM—H. I. Murray, 45 Ballarat Rd., Maidstone.
3ZHT—T. Cox, 2 Hampton Gr., Camberwell.
3ZIT—T. E. Straughair, 185 Stephen St., Yarraville.

Queensland

4AU—B. R. Aubrey, 44 Elbury St., Gaythorne.
4LB—A. Boekholt, H.M.P. Reserve, Private Mail Bag, Stuart, N.Q.
4TW—C. T. Ferris, Ringtail, via Pomona.
4ZBA—A. R. Bradley, 58 Wardell St., Ashgrove.
4ZCW—W. S. C. West, 33 Rawlinson St., Murarrie.

South Australia

5IM—K. W. Garratt, 30 Elston St., Lockleys.
5ZCG—D. J. Caddy, 78 Matthews Ave., Seaton North.
5ZCP—J. S. Burns, 16 Bernard St., Findon.

Western Australia

6ZCC—M. L. O'Rourke, 129 Parkin St., Rockingham.
6ZCD—D. J. Reitze, Broadcasting Station 6WA, Wagin.

Tasmania

7TT—T. J. Tongs, 83 Leven St., Ulverstone.

Territory of Papua and New Guinea

9JG—J. N. Georgiades, C/o. O.T.C.(A.), Rabaul.

Antarctica

0JV—J. V. Denholm, Wilkes.

CHANGES OF ADDRESS

VK— **Australian Capital Territory**

1VP—E. Penikis, Northbourne Ave., Canberra.

New South Wales

2FS—B. C. Fleck, 30 Sullivan St., Kempsey.
2SB—R. W. Chaplin, 31 Grace Ave., Beecroft.
2SJ—G. A. Clipsham, Newcastle and Brunswick Sts., East Maitland.
2ABL—W. A. Easterling, 279 Forest Rd., Kirrawee.
2ADV—C. Mc. Hicks, Stuart St., Forster.
2AJM—F. H. Bull, 14 Lytton St., Cammeray.
2AKQ—J. H. Lambert, Lot 4, Bocks Road.
2ANB—R. J. Baty, 41 Lawson Pde., St. Ives.
2ANV—T. Bremner, 23 Kardella Ave., Killara.
2AQX—R. Grivas, 338 Roberts Rd., Greenacre.
2AYE—D. E. Evans, 62 Todman Ave., Kensington.
2ZBU—A. M. La Macchia, 26 Derby St., Wahroonga.
2ZEM—E. F. Matthews, 24 Ettalong St., Auburn.
2ZFM—B. C. Milne, 61 Russell St., Eastwood.

Victoria

3FW—W. A. Fulton, Lot 25, Mount Dandenong Rd., Kilsyth.
3IK—I. K. Sewell, 72 Viewville Rd., N. Balwyn.
3IZ—P. D. Williams, "Treetops," Kent Hughes Road, Eltham.
3LG—J. A. Williams, 26 Mummery St., Mount Waverley.
3PO—D. A. Miller, Lot 8, Moola St., Nerrina, Ballarat.
3QN—P. E. Maplestone, 42 Berkeley St., Huntingdale.
3TU—J. F. Irvine, 8 Eton Square, 476 St. Kilda Rd., Melbourne.
3US—G. M. Churchward, 20 Smith St., Leongatha.
3ABS—R. W. Sandon, 6 Hudson St., Caulfield.
3AJO—J. R. O'Halloran, Hamilton St., Murtoa.
3AKT—M. K. Tulloch, 131 Junction Rd., Nunawading.
3ALU—L. E. Lloyd, Grey St., Nyahwest.
3APG—P. J. Grigg, Lot 44, Glenburn St., Newcomb, Geelong.
3ARH—J. B. Hawke, Day Ave., Omeo.

Western Australia

6HK—D. E. Graham, 108 Edinboro St., Mt. Hawthorn.

Territory of Papua and New Guinea

9HI—L. Raebel, Station: Lawes Rd., Port Moresby, Papua; Postal: C/o. Posts & Telegraphs Dept., Port Moresby, Papua.

CANCELLED CALL SIGNS

VK— **New South Wales**

2ASX—C. H. A. Armstrong.
2AUA—M. C. Carpenter.

Victoria

3OB—L. T. Burrows.
3UB—R. D. Tymms.
3ZEY—H. A. Harris.

Queensland

4HW—H. J. Weatherley.
4ZBC—K. D. Campbell.

Western Australia

6BY—B. R. Aubrey.

Territory of Papua and New Guinea

9KC—W. Bock.

PERMITS GRANTED FOR TELEVISION EXPERIMENTS

VK— **South Australia**

5ME/T—S. G. McLean, 22 Celtic Ave., Clovelly Park.
5ZCJ/T—J. E. Barker, 41 Gertrude St., Glandore.

Three-Band Converter

N. CASEY,* VK9NT

HOW many of us, especially among those who have just gained their call signs, have thought and searched for some type of circuit which would give us as much bandspread as we wished on all bands without plug-in type coils, and if possible using only one set of coils?

The accompanying circuit is the same as the converter in use at this QTH and gives a very good account of itself.

Most of the items are available out of our junk box or through disposal stores, so that all that is needed mostly is the patience and energy to do the job.

The gang is made from a b.c. three-gang condenser and after carefully unsoldering the stator plates from their mounts in each section of the gang, work is proceeded with to remove the unnecessary plates, leaving only four and these being double spaced. The same treatment is given to the rotor plates, but in this case five plates are left (double spacing, of course). The stator plates can now be replaced and aligned.

The coils are best wound with whatever formers are on hand, preferably about ⅝" diameter, and slug-tuned (although slugs are not absolutely necessary). The aerial and r.f. coils are wound by getting just sufficient turns to tune 14 Mc. with the 100 pF. condenser, and the oscillator coil to tune to the difference between the selected i.f. frequency, i.e. if 2 Mc. is chosen, as in the author's case, then the oscillator coil should tune to 16 Mc.

The primaries in each case should be wound with about 30 s.w.g.. Approximately 6 turns will be needed on the aerial coil (depending on the impedance of the feed system, etc.), whilst the r.f. should be about 8 turns of the same gauge wire.

The oscillator primary should be interwound with the secondary, and for a start about half the number of turns of the secondary should be wound on.

After the converter is made up and you have placed a meter in the B+ lead to the oscillator coil, you should remove half a turn at a time from the primary until an even plate current over the three bands is obtained.

After adjusting the oscillator primary, the aligning period starts. Starting with the 14 Mc. band, adjust C27 to 14.00 Mc. with C23 in full mesh. The dial is then swung over to open mesh and 14.35 Mc. is tuned to with the bandspread condenser (C24). Return the dial back to full mesh again and 14.00 Mc. is again retuned with C27.

This process is continued with until you have 14.00 Mc. at full mesh and 14.35 Mc. at full open mesh.

The same procedure is again carried out for 21 Mc. Adjust C28 for 2100 Mc. with full mesh and C25 tuned for 21.45 Mc. with full open mesh.

C29 is tuned for 28.00 Mc. and C26 is tuned to the h.f. end of 28 Mc.

R.f. coil alignment is carried out in the same manner as the oscillator coil. 14 Mc. is peaked with C11, and 14.35 Mc. peaked with C14.

21 Mc. is peaked with C12, and 21.45 Mc. is peaked with C15.

28 Mc. is peaked with C13 and the h.f. end is peaked with C16.

The same applies with the antenna coil. 14 Mc. peaked with C1 and 14.35 Mc. with C4.

21 Mc. is peaked with C2 and 21.35 Mc. is peaked with C6.

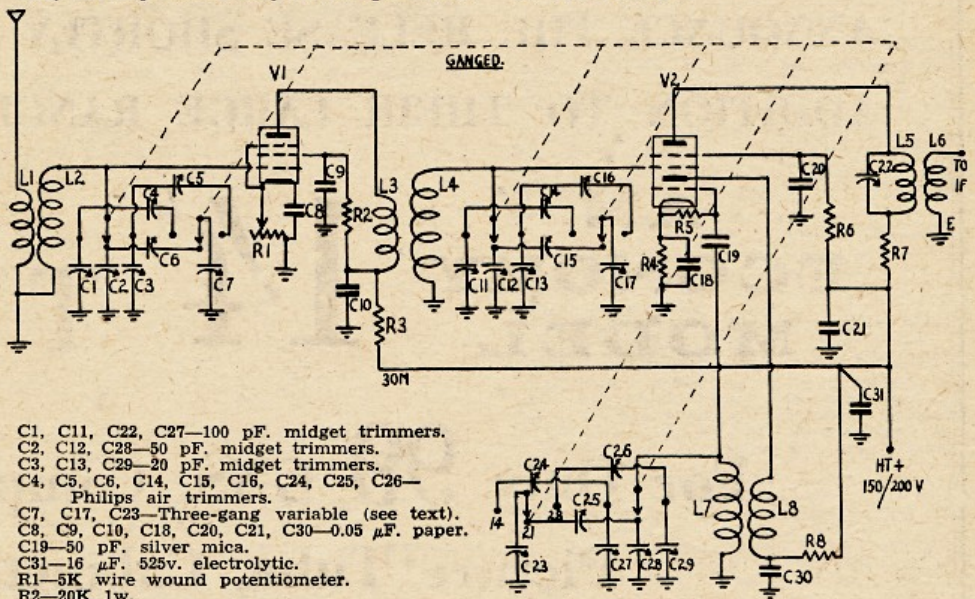
28 Mc. is peaked with C3 for the low frequency end and C5 for the h.f. end.

The tracking should be found to be OK, but any errors may be compensated for with the use of the iron slugs, using the iron slugs to peak the l.f. end in each case, and remember that once a slug is shifted, then you have to retune each band.

No aerial trimmer is required, even though the original job has one it is never used, as whenever tried, the tracking of the gang is found to be true.

The output coil is tuned by the slug and C22 for optimum results. Note the connections!

150 volts is quite sufficient to run the converter and it will be found that a better signal to noise ratio will result at this voltage.



C1, C11, C22, C27—100 pF. midget trimmers.
C2, C12, C28—50 pF. midget trimmers.
C3, C13, C29—20 pF. midget trimmers.
C4, C5, C6, C14, C15, C16, C24, C25, C26—Philips air trimmers.
C7, C17, C23—Three-gang variable (see text).
C8, C9, C10, C18, C20, C21, C30—0.05 μF. paper.
C19—50 pF. silver mica.
C31—16 μF. 525v. electrolytic.
R1—5K wire wound potentiometer.
R2—20K 1w.
R3—1K 1w.
R4—250 ohms 1w.
R5—47K ¼w.
R6—25K 1w.
R7—1K 1w.
R8—30K 1w.

L1, L2—Antenna coil (see text).
L3, L4—R.f. coil (see text).
L5, L6—Use a b.c. antenna coil.
L7, L8—Oscillator coil (see text).
V1—6AK5, 6AM6, etc.
V2—6AE8.

* C/o. Dept. of Posts and Telegraphs, Rabaul, New Guinea.

CQ CQ CQ AUSTRALIAN AMATEURS DE THE FEDERAL EXECUTIVE

(Continued from Page 12)

I think you will agree that it is gratifying to know that a Member of the House of Representatives has such a keen sense of the value of the Amateur service to a democratic country like Australia and is prepared to voice his thoughts on behalf of Australian Amateurs.

Overseas magazines have been in touch with your Executive, as they have been with other Amateur Societies, and the "plea" for considered verdicts will be published all over the world on behalf of the Amateur service which so easily can be forgotten in this complex world of communications in which we live today.

In conclusion I'll say this, at the expense of reiteration. **If you don't use the bands, you stand to lose them.** Amateur Radio without a voice at Geneva will be a case of out-of-sight-out-of-mind. John Moyle has a job to do. He'll do it. You must support him. Under the rules of the I.T.U. he can speak as a non-voting member of a Delegation with the permission of his Delegation and the Chairman of the Committee or Sub-Committee working at the particular time. Whether he gets that chance depends on John, and I think you will agree he is capable in every direction. How long he can stay there depends on you! If you haven't subscribed your £1, would you give it some further thought.

I hope I have given you some insight into the real dangers which beset our cherished hobby and that the time, effort and finance which has gone into this project will protect our hobby for our sons and their sons.

73,
Max Hull, VK3ZS.

NEW ADDRESS FOR MAIL TO "AMATEUR RADIO"

All manuscripts, notes and correspondence to "Amateur Radio" should be forwarded to:—

P.O. BOX 36,
EAST MELBOURNE, C.2,
VICTORIA.

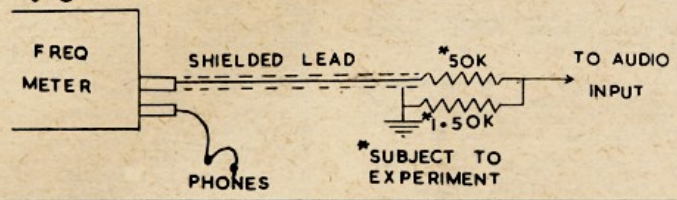
HINTS AND KINKS

AUDIO TEST TONE

To obtain an audio test tone for my outfit, I use a BC221 frequency meter with the crystal calibrator switched in, and then by adjusting the pitch of the heterodyne against the calibration book, can get a fairly good tone.

The method of coupling this to the speech amplifier or such: I have a length of shielded wire with a simple resistor attenuator at the end. The frequency meter has two headphone jacks which allows one for monitoring the tone and the other one to plug the shielded lead into.

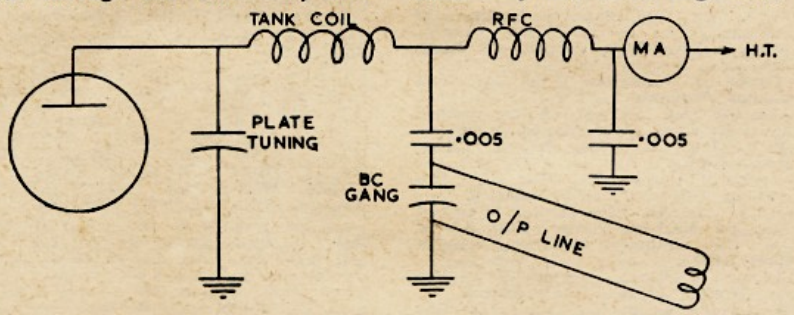
—V. J. Kitney, VK6VK.



SHUNT COUPLED PI-COUPLERS

An idea to overcome the problem of burning out r.f. chokes in transmitters is to use shunt coupling in pi-couplers. In this arrangement, I have fed the d.c. path through the tank coil, and placed the r.f. choke at a much lower r.f. voltage as seen for the circuit.

The d.c. blocking condenser has to carry all the circulating tank current and needs to be a substantial one. Here I have used an 0.005 μF. capacitor with good results. Also, the reactance is sufficiently low to be neglected.



The output to the aerial coupling unit is taken from across the ganged b.c. condenser as usual.

This method has been in use at VK6VK for a number of years.

—V. J. Kitney, VK6VK.

FIBRE-GLASS WHIPS

Resonance of helical fibre-glass whips may be altered by winding a few inches of magnetic recording tape around one end instead of removing part of the helix.

—D. L. Kinsella, VK2AXK.

D.X.C.C. LISTING

Listed below are the highest twelve members in each section. New members and those whose totals have been amended will also be shown.

PHONE

Call	Cer. No.	C'nt-ries	Call	Cer. No.	C'nt-ries
VK6RU	2	221	VK6KW	4	184
VK6MK	43	216	VK3BZ	3	176
VK4FJ	21	212	VK4RW	23	164
VK3WL	14	211	VK3EE	10	163
VK3ATN	26	204	VK9DB	31	161
VK4HR	12	192	VK4WF	16	160
New Members					
VK5AB	45	112	VK4EJ	44	108

C.W.

Call	Cer. No.	C'nt-ries	Call	Cer. No.	C'nt-ries
VK4FJ	29	246	VK3XU	48	213
VK3KB	10	245	VK3YL	39	203
VK3CX	26	235	VK5BY	45	202
VK3FH	15	226	VK6RU	18	196
VK3BZ	6	222	VK2EO	2	191
VK4HR	8	218	VK5RX	23	176
Amendments					
VK3RJ	42	149	VK6KW	40	112
			VK6KW	40	111
New Members					
VK5KU	63	108			

OPEN

Call	Cer. No.	C'nt-ries	Call	Cer. No.	C'nt-ries
VK2ACX	6	250	VK3XU	61	221
VK4FJ	32	249	VK6MK	74	220
VK6RU	8	243	VK3HG	3	215
VK4HR	7	233	VK3JE	12	210
VK3BZ	4	231	VK3ATN	69	210
VK3WL	45	225	VK6KW	13	201
New Members					
VK3AHO	76	119			

FOR FIT PERSONS ONLY!

FOX HUNTING IN THE U.S.S.R.

In "Paano," No. 6, 1958, the Russian Amateurs' journal, there is an outline of the methods of fox hunting in the U.S.S.R. Apparently it is treated as a "States-wide" athletic contest.

Hunts are conducted on foot and there are three foxes—apparently stationary. The first fox is located four kilometres from the start; the second within three kilometres of the first, and the third within three kilometres of the second. Frequencies used are 3.5 mc., 38-40 mc., and 144-146 mc.

Home-made equipment is a must, but the accent is on athletic fitness. The contest is conducted in each State and the winners progress until a "grand champion" emerges.

PORTABLE ANTENNAE

When operating on low power an efficient antenna is very desirable; mismatches here can make the rig useless in adverse conditions. An inexpensive antenna can be made up from P.V.C. bell wire, and any length of 300 ohm ribbon that the dealer has lying around. Most t.v. salesmen will give away any number of short bits and pieces.

I experimented with the following antennae recently on a 10-watt transmitter, and list them in order of performance:

1. Folded dipole and 300 ohm feeder.
2. Windom (single feeder won't short out in the rain).
3. Zepp (open wire feeders).
4. Dipole fed with (a) Lamp flex;
   (b) 300 ohm ribbon;
   (c) Twisted bell wire.
   (All of these dipoles were useless in rain.)
5. End-fed half wave.

Ice cream sticks dipped in melted candle grease make good spacers for the dipole or Zepp feeders, and the antenna may be raised 50 or 60 ft. by slinging fishing line over a high tree. My line showed no sign of breaking after a month's vacation. Bell wire will not support much weight, so it's risky using a long co-ax feeder.

—D. L. Kinsella, VK2AXK

AWARDS

MOORABBIN AND DISTRICT RADIO CLUB
Amended Rules for the Award of the
HON. MEMBERSHIP CERTIFICATE

The object of this Award is to promote interest in, and friendship with, VK3 contacts. There are many active transmitting members of the club. Ask all VK3 contacts: "Are you a member of the Moorabbin and District Radio Club?"

1. To become eligible for the Award, Australian mainland stations including VK7 must contact by radio fourteen member stations currently financial at the date of contact.
2. Overseas stations including VK0 and VK9 call signs must contact by radio five member stations currently financial at the date of contact.
3. The club station VK3APC may be regarded as a financial member station for this purpose.
4. On completion of the required number of contacts, the applicant must forward to the Certificate Officer by any suitable means a list of the call signs of members contacted, together with the times and dates of contact and his own correct postal address.
5. After verifying with the logs of the named member stations, a Certificate of Honorary Membership will be awarded and forwarded by post.
6. If the required number of member stations is contacted for a second or subsequent time, a further award may be issued. This will take the form of an emblem for attachment to the certificate. Stations named for such an award must not include those already named for a previous award.
7. Honorary membership will allow all the privileges of full membership of the club, less the counting of contacts with Honorary Members for the award of this certificate and less the power to vote.
8. This award is not available to financial members of the club. Station operators who have been financial members must have resigned their membership in writing prior to the date of any contacts named for the award of this certificate to themselves.
9. Rules and conditions of this award may be amended by a notice of motion one month prior to being put to the vote at a regular meeting of the club. After being passed by a majority of members present, the amendments will come into force.
10. The address for certificate correspondence is: Moorabbin and District Radio Club, C/o. Wireless Institute of Australia, Victorian Division, at the current address of the W.I.A. Victorian Division, which is obtainable in call books and other publications.

D X

John C. Pinnell, VK2ZR
15 Summit Avenue,
Earlwood, N.S.W.

Last month, what was considered as good DX under different conditions, was given. The operator new to this phase of our hobby, is often bewildered on how to get started. His first reaction is to think of elaborate equipment with rotary beams, etc., as a must. This is not the case; simple gear can be used and much good work done. Many have won their DXCC with less than 50 watts and a simple dipole only 30 feet or so in height. The rx is important and must work well for it is no use trying to work DX if you can't hear them. Small rx's of 5 valves can do a good job in the early stages for they are capable of bringing in signals from any part of the world when the QRM is not too tough. If you have simple gear, give it a go. Pick a time in the early morning or of an evening when not too many local stations are active and try your luck. There is less local activity during the week mornings around 6 a.m. and if you go on 20 metres there is plenty of DX stations at the present time. Working DX depends more on the operator than on the gear. Of course a good DX operator will do better work with good gear.

NEWS AND NOTES

VK3IB, ex-VK1AC and VK0AB, sailed for Gilbert and Ellis Islands on Feb. 11. He should be active before the end of March. An application has been made to U.K. for a call sign which should arrive by the time he is ready to get going. He will be there at least two years. This information comes from Bill 2EG who will be having fixed skeds with him and also handling his cards.

W4KAC is planning a trip and hopes to be operating in May from Greece, Crete and Rhodes. (2QL).

VR3T is very active on both phone and c.w. on the 14 Mc. band. Time about 0700 and again 1100z.

If you need Brunei, listen at 1000z on 14 mc. for **VS5AT**, **VS9MA** and **VS9MI** are fairly active on the Maldive Islands. They will be found around 14040 kc.

It is reported that **VR6TC** is again operating on phone from Pitcairn Island. He is on 14 mc. and starts about 0600z.

ZM6AS, in British Samoa, has just about completed his new rig and will be back on the air soon.

The calls **KS4BA** and **KS4BB** have been issued to W2NSD and W9EVI to use on a DXpedition to the Caribbean area. KS4BA is issued for Roncador Key, and KS4BB for Serrana Bank. These two uninhabited islands are located in the Caribbean Sea off the east coast of Nicaragua. Amateur Radio has not been operated from either place, and it is believed they qualify for separate DXCC country status by virtue of their distance from Swan Island, the original KS4 prefix. The DXpedition is planned to start near the end of March or early April. One report says they may be on Serrana Bank as early as March 17.

VP8BK is a rare one located on South Georgia Island, so don't pass him over as just another British Antarctic base station.

Four stations from Mauritius should help those needing the 39th Zone to complete their W.A.Z. **VQ8AQ** and **VQ8AH** are active on 21 Mc. and **VQ8AL** on 14 Mc., while **VQ8AD** is on 21 Mc. phone.

The only active station on Swan Island is **W4JRD/KS4**. He operates 20 metre phone using 600 watts. He will be there until the end of April.

JT1KAA is operating on 3.5 and 7 Mc. and so keeping Mongolia on the map.

ZL3DX, who operated ZL3DA, Chatham Island, is planning another DXpedition, this time to the very rare Tonga Island, VR5, Friendly Islands. If transportation funds are made available he will leave during May and stay about two weeks on Tonga.

DL9PF intends operating from the Island of Rhodes for about a month commencing July 15.

ZB2A/VS9 is genuine and is working from the Sultanate of Omen. **VS9OM** should soon be operating s.s.b. on 14315 Kc. from this locality.

If you worked **UA1GR/UA0**, he was in Tanna Tuva, but understand he was there for only two weeks.

OD5LX, Lebanon, was very busy with a big pile-up the other morning on the edge of the 7000 Kc. band.

Guadeloupe.—There are two stations active; **FG7XC** with low power is on 20 and 20 metre c.w. **FG7XE** is quite active on 15 metre phone.

XZ2AD, Burma, should be on the air with a kw. on s.s.b. by the time you read these notes.

STATIONS ACTIVE

Stations known to be active are:—

7 Mc.: Evening, F8VJ, ZB1AU, CN2BK, OZ-9NI, XE1FV, PY7VBR, HK8FP, PY7JL, LA2SB, SL3AG, I1AIM, HB9SV. All on c.w. between 0730 and 1000z.

14 Mc. a.m. around 0700 and 2000z: FP8AP, ZS3E, 9M2GA, KC6CG, UC2KAB, UA1DZ, VS-9AO, SP3GZ, I5GN, OD5A, FM7WE, FP8AP, LX1DE, LX1KFC, HV1CN, VQ4KRL, EL3A.

14 Mc. s.s.b. 0700 and 2000z: OQ5GU, 9G1CX, UA3CR, 4X4DK, SV0WL, YN1CK, CN8JE, UA-1DZ, FD8DZ, LA6CV, GW3LLU, ET2US, ET-2BP, ZS6OY.

ADDRESSES

YK1AT—Via OK KSL Bureau.

SU1MS—Mahmud Abdul Salam, 13 Kawa St., El Daher, Cairo.

HI8GA—G. Abbes, Box 993, Ciudad Trujillo Dominican Republic.

YS1LA—Luis Andreu, Jr., P.O. Box 346, San Salvador, El Salvador.

YN1CK—Via W1EQ.

9G1CX—Box 26, Akwatia, Ghana, West Africa.

HP1GA—P.O. Box 5310, Panama, Republic of Panama.

VP2KR—Roy, Golden Rock Airport, St. Kitts, B.W.I.

HC5CL—Carlos A. Jaramillo, P.O. Box 1366, Cuenca, Ecuador.

HL2BO—Via HL2AJ, College of Engineering, Seoul National University, Seoul, Korea.

5A5TF—Fred, P.O. Box 638, Tripoli, Libya, North Africa.

PZ1AP—Arnold Polsbroek, P.O. Box 547, Paramaribo, Surinam, South America.

3V8AC—Essid Abd/Ali, Rue Rekeb, Impasse Jaouapa, Msaken, Tunisa, Nth. Africa.

EL8D—C/o. U.S. Embassy, Monrovia, Liberia, West Africa.

EL1K—Chester L. Hoyt, Firestone Plantation Co., Harbel, Liberia, West Africa.

TL2MEM—Mariano Echeverria M., P.O. Box 827, San Jose, Costa Rica.

ZB1USA—Bert, F.P.O. 240, New York, N.Y., U.S.A.

TF2WDY—A.P.O. 81, New York, N.Y., or via W4YHD.

FQ8AY—Box 538, Brazzaville. (2QL)

VQ2AB—Buggy, Ndola, Northern Rhodesia. (4DO)

9M2GA—Lee, Nuar, S.W. Malaya (127 miles north of Singapore).

QSL's

VQ6LQ is at present sending **2QL** many of the VK boys QSL's and catching up on his back log, so there is hope for those still in need of one from him.

JT1AA cards are coming in now, and **JT1YL** should be here this month.

W2CTN is handling QSL chores for all these: VK2FR, VR2DA, VR2DK, FK8AT, JZ0HA, KW6CU, VK9BW, VK9NT, VQ3CF, 9G1BQ, ZD2DCP, OX3RH, FM7WU, and ZS7M.

QSL's RECEIVED

2QL: CR7LU, EA6AW, EL1X, GC3AAE, FP-8AR, HZ1AB, OD5LX, OX3RH, OY7ML, UR-2BU, VQ3CF, VS9MA (7 and 28 Mc.), XZ2TH, ZD2GWS, 3V8CY. **2ZR**: EA6AW, ET2VB, CE2JP, HZ1AB, GC3AAE, JT1AA, UB5AU, UC2AX, UQ2AK, UQ2AN, VQ2GW, VQ2MS, VQ4KRL, VS9AS, 3A2BT. **3AOM**: HK1HV. **BERS195**: CN2AQ, JT1AA, KP4AAQ, PI1VB, VK0CC, VQ2GF, VS1FW, VS9AD, ZB1CR, ZB2Z, UA0LS/MM.

ACTIVITIES

3.5 Mc. c.w.—2QL: W4KAC*, KH6XT. **L2022**: Ws.

14 Mc. c.w.—2AMB: GC2FMV*, ES5JA*, OZ-8NJ*, ZE8JJ*, CM8BF, FB8XX, FB8ZZ, BU1DR, CR9AH, FO8AU, KW6CL, UD6KAF, VQ6LQ, VU2GJ, XW8AI, XZ2TH, YJ1DL, ZD6WJ, 4S-7FJ. **2QL**: GC2FMV*, IS1FIC*, CE0ZA*, OX-3RH*, SM5WN/LA/P*, EA9AP, CR5AR, FB8CJ, FF8BZ, FQ8HA, FQ8AY, FM7WP, FY7YF, UG-6AG, VQ5GJ, 3V8AC (VR7XR phoney). **2ZR**: CN8BK*, CN8LG*, HG9VL*, HL2BO*, I1NU*, LA4ZC*, LU8NA*, OK1AAA*, OZ9AO*, PA-0FF*, SM6BTZ*, SP8KBM*, UA3AI*, UC2AX*, YU1EH*, ZP5CF*. **4DO**: W*, K*, VE*, VK9*, EA3CY*, CN8BX*, F8HO*, F8JD*, FA9VJ*, FQ8AP*, FF8BX*, G2BB*, G2DPD*, G3BHW*, G3HLX*, G3IFB*, G6HL*, G6YQ*, I1CCK*, I1PJ*, HB9KM*, KC6KR*, HC4IE*, OA4FM*, OE6RP*, ON4FQ*, PA0ZL*, PJ4DA*, PY8YP*, SP8HU*, UA1OD*, UA6LF*, UA6KOE*, UA-6UG*, UA0CC*, UA0LC*, UB5BG*, UL7KAR*, VQ2AB*, VQ6AB*, VS1JV*, VS6AE*, EA8CP, ET2VB, CR6AP, CR4AH, FF8BZ, FF8CC, FM-7WP, FQ8AY, FQ8HD, FY7YF, LA6PG/D, OD-5LJ, OQ5IB, VE8BN, VE8MX, VQ5EZ, VS9AC, VS9MA, VP5RA/P, UC2AR, XZ1WD, ZD2JM, ZE8JJ, ZS5SL, ZS6ASY, 3V8AO, 4X4JR, 4X4JU. **L2022**: VP9EP, UI8KR, SP5AA, VP9EN, OX3RH, VO1DX, ZC4LL, LZ1AF, LA3DB, VK0CC, 9M-2FL. **BERS195**: BV1US, CN8BK, CT3AN, DL-0BH, FF8BZ, FG7XE, GC2CNC, GD2FRV, HC4IE, HS1C, HV1AD, I5AAW, SU1MS, SV-0WP, UD6KAK, VK0CC, VP5RA/P, VP9DU, VQ5GJ, VR2DK, VS9MB, XZ2TH, ZB1NB, ZD-2GUP, ZD7SE, 9M2DW, 9M2FO, LA5HE/MM, LA8UD/MM, SL8AY/MM, WA6DFH/MM.

14 Mc. Phone.—2AMB: YS2SA*, ZK2AB. **3AOM**: CT2AI*, CN8JE*, HC1FG*, KA5MC*, KA2CB*, VE1EI*, VU2BK*, XZ2SY*, Ws*. **4DO**: Ws*, KH6s*, JAs*, CE0CO*, CE0ZB*, KA0IM*, UB5BG*, 9M2GA*, KG6, KM6, KX6, VK2FR, ZE7JR. **L2001**: GM3MBL, W6YET. **L2022**: I1ALC, FK8AC, 9M2FL. **L3065**: Ws, KH6, ZLs, KR6s, KX6BT, KX6BR, KAs, VK9s, VE1, EI, VE3EIO, VK2FR, KL7CMI, I1LT, HC1SU, KJ6BV, KC4USM, KW6CE, VQ5JA. **BERS195**: G3HFD, OD5AG.

21 Mc. c.w.—2QL: GC3HFE, CN2AY, 5A5TO. **2ZR**: GW3KSQ*, DL3ZM*, ON4GK*, PA0DN*. **4DO**: Ws, KNs, KH6s, WV6CQY.

21 Mc. Phone.—4DO: Ws, KH6s, KA2HA, JA6BC, KR6HI, VK9NT. **L2001**: JA4HM, JA-6AK, KB6BH, KR6JM. **L2022**: KR6HI, VS1GZ.

28 Mc. c.w.—4DO: Ws, KH6s, JA3GM.

28 Mc. Phone.—4DO: Ws, KM6s, KA0CG, KX6CA.

I have received very little information on 7 Mc. activities but from my own observations and some reports it seems as though some good DX is being missed. **BERS195** heard the following: DL6DE, G3MWN, HL2AC, HL2AK, KH6s, JA9MM, OH2YV, SP2KBC, UA1KGC, UA0FS, UB5TV, UC2KAC, UO5AA, UQ2CG, YU1JK, W8QOH/MM. **L2022**: Lots of U.S. Novices, W8QOH/MM off Bermuda.

I thank **W4KVX** for the use of his DX Bulletins, via **2QL**. **2AMB**, thanks for the phone call and help. **2QL** has made it possible for me to pass on much information. **3AOM**, your letter and remarks much appreciated. **4DO** finds the bands good in the mornings on 14 Mc., especially after the cyclone. **WIA-L2022** is still on 174 countries, that new rx should help you Don. **WIA-L3065**, if you keep the good work up it will be no time before you have 100 countries. **WIA-L2001** has been doing fine with his rx on phone, last month he got a boost with his c.w. reception, hi! **BERS195**, Eric's score is now 253/244 heard and is very pleased with his JT1AA QSL card. I need the help of everyone interested in DX so please give me a few minutes of your time each month by writing and letting me know what is doing on the various bands. You may have only one item, but send it along as each little bit will help.

— . . . —

INTERNATIONAL INTEREST IN BRIT. I.R.E. T.V. CONVENTION

The Convention being arranged by the British Institution of Radio Engineers on **Television Engineering in Science, Industry and Broadcasting** is attracting great international interest, and many members and other delegates from overseas have arranged to attend.

The Convention will be held in the University of Cambridge from July 1 to 5, 1959, and delegates will reside in the colleges of the University.

Among the distinguished engineers from abroad participating in the arrangements will be Dr. Vladimir K. Zworykin (Director of the Medical Electronics Centre Rockefeller Institute, New York), and Dr. S. K. Mitra, F.R.S., M.Brit.I.R.E. (Emeritus Professor of Physics, Calcutta University).

Dr. Zworykin, who will give the 4th Clerk Maxwell Memorial Lecture during the course of the Convention, is an outstanding pioneer in the field of television engineering.

Dr. S. K. Mitra's contribution to the Convention will be particularly welcomed in view of his world-wide reputation as an authority on the Ionosphere. He is the author of a standard work on this subject—"The Upper Atmosphere"—and his achievements have been recognised by his election as a Fellow of the Royal Society in 1958.

Dr. Mitra has been a Member of the Institution for many years, is Chairman of the Calcutta Section, and a member of the Institution's Indian Advisory Committee.

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* Call signs and prefixes worked.
z zero time—GMT.

VHF

Frank P. O'Dwyer, VK3OF
190 Thomas Street,
Hampton, Vic.

50 Mc. BAND

JA and KR6 to the fore with E's moving into the background were the features of the last month's activity. Most Divisions shared in the JA openings to varying extent with VK7 apparently the only one to miss out. OT Adrian 2HE, with renewed interest after a couple of years off the band, starting late, finished the Ross Hull Contest with 84 contacts, then went on to use up the E's by working VK5 on Feb. 1, VKs 4LK, 4ZAK and 4ZBE on Feb. 8, missed the VK3 and VK5 opening caught by 2ZCH and 2ZBQ after 2100 E.A.S.T. on Feb. 15, couldn't raise 4NG on Feb. 24 at 1320, but satisfied himself by working JA1, 2, 5, 0 for 10 contacts, signals to S9 between 1350 and 1600. As Adrian puts it, "most of the time I had practically the whole of the continent on my back, just what the DX hound dreams about". A couple of VK4s were on for a time and had their share.

Feb. 8, VK5BC worked JA8 in the early afternoon and 2ZBQ listened to JA4 at 1900. Feb. 18, 3CI, 80 miles north of Melbourne, worked a fistfull of JAs, whilst 3ZCG, E.S.E. of Melb., managed four of them. Feb. 23, VK2/JA, Feb. 24 2ABR, one of the P.R.P. 100 worked 4ZBE and 4LK between 1800 and 1830 and followed up next day by contacting JA2 and 8 for six QSOs between 1227-1430. In the meantime Hughie 5BC had almost daily openings to JA during the period Feb. 20-27. The northern VK4s once again treat these JAs as locals. The gang up there have had daylight openings at least every couple of days with evening openings about every third day.

The end of the month and into March found VK5 almost daily with JA to natter to, sigs. good to indifferent. Jock 3ZDG heard weak JA sigs. at 2300 on March 1, but the VK3 gang were really stirred into action at 2240 Mar. 5 when JA4IO and others appeared, though sigs. were not too good. Jim 3AZY had contacts before sigs. went out about midnight. Mar. 6 2ZJN and 4ZAZ appeared on the band in VK3 to tell of their doings up north. March 8 ZL-4GY (51.02 Mc.) was QSOed by David 3ZAT at 2145 and was heard by the rest of the gang. This is the first VK3/ZL contact since the ZLs shifted to 51 Mc. ZL4GY reported that the ZLs were once again working the Ws. Most important, the Ws are gathering down towards 51 Mc. for these contacts. But that is not all. The Divisional notes give more detail, highlighted by the KR6 story from VK4.

P.R.P.—The P.R.P. is now operating on a reduced scale, official reporters throughout the world being limited to 100, reporting being concentrated on "propagation paths which cross the equator, and for other openings such as E and BS which accompany trans-equatorial work." VK representatives are 2ABR, 3AHL, 3ALZ, 3ZDG, 4JO, 4NG, 4ZBI, 4ZGL, 6BE, 9XK and for ZL, 1ABL. Congrats. to these fellows for their appointment, a just reward for their consistent reporting to P.R.P.

Should you work that TE path or hear anything unusual, send details to your nearest P.R.P. reporter. He will vet it against his own log and enclose it in his report if not already noted through his own observations. Remember, these fellows cannot be 24 hours on the job and you can help them out on this vital project. Definite observation is required, doubtfuls are out, they confuse the picture. An American voice would neither indicate a W signal nor that it originated over the equator, the national prefix of the station calling would be needed to spot its location. Help these boys out, they have done and are doing a mighty job and may possibly be the deciding factor in our continued occupancy of the v.h.f. bands.

T.V.I.—First up comes from Garth 3ZFA who found this series trap, which consists of a parallel resonant circuit, most effective for clearing up trouble on Channel 9 when placed in his feed line. Mounted in a 3-inch square by 1½ inch deep steel box, co-ax connectors each side, 3 turns of 16 s.w.g. wound on a pencil, tuned by a Philips trimmer, in his case about two-thirds of the way out. This offers a very high impedance at its resonant freq., in this case about 200 Mc., but a low impedance to all other frequencies. This idea is simple, you may know what it is for and what it is; but the info. puts you approx. on Channel 9, allowing for variations in construction, and could save a lot of work in working out LC figures, building Lecher wires, borrowing meters, etc. Simple, detailed, yet effective. —3OF.

NEW SOUTH WALES

Meeting, February, saw a good roll up to hear a lecture by John 2ZAV on his re-building of a Command Tx to 6 mx v.f.o. operation and use of the unit as a 144 meg. exciter. Using the original 6J5 v.f.o. stage only, and by the addition of an isolator and multiplier (12AT7) the rig finished with a 2E26 in the final. All agreed on the excellence of John's lecture. Details of 50 meg. coils for the Group's project converter were given and complete circuitry of the unit has now appeared in February and March issues of a well known Australian magazine, all of which the Group is justly proud.

Day Fox Hunt, Feb.—This was a really enjoyable day and most successful for some time with nine cars participating as follows: 2ZBX, 2ZCP, 2ZCF, 2ZAL, 2PM-2ER, 2ANF-2AWZ, 2ASZ, 2OA, 2ZAV, 2ZJC and 2ZBG. The run took us through Boulkam Hills, Glenhaven, Maroyla, Cattai, Sackville and Glenorie and was won by 2PM and 2ANF dead-heating, followed by 2ZBG and 2OA also tieing.

Night Fox Hunt, Feb.—Another good roll up with 2ZAV, 2AWZ, 2ZCF-2ZAL, 2PM-2ER, 2ASZ, 2ZJK, 2OA, 2ZBX-2ZCP, 2ZFC, 2ZCW. The fox, Alen 2RX and Ron 2ZBG, provided an excellent signal and were run to ground in approx. only 45 minutes by John 2ZAV, then followed by 2AWZ, and 2ZCF-2ZAL. Congrats. to John. All then, except Kev. 2ZFC, whose battery ran flat, enjoyed an excellent hot dog and tea supper by courtesy of the foxes.

April Meeting.—Will hear a discussion entitled Winch (2OA) versus the rest (you) on noise figures and antennae at v.h.f's. With so much thought on the subject lately, together with conflicting viewpoints expressed, this meeting should informatively settle many arguments (or start some).

April Autumn Field Day, 12/4/59.—We would like to see a maximum effort on this event, a message handling contest for home and portable stations between 10 a.m. and 4 p.m. Remember, chaps, we need many stations in the field to make it a success and as far from Sydney as possible so that country stations can participate to their full numbers. Details, rules, etc., will be given via the Bulletin and 40 metre broadcasts.

April Night Fox Hunt.—On a date to be fixed at time of writing. This will be a night hidden Tx Hunt with Keith 2ZJK as fox. Our new handicap rules and placing of the tx so that the beam is visible and accessible from a car will apply.

2 Metres.—A welcome is extended to new stations heard, Gordon 2TW at Cammeray and Arthur 2ZBV. 2ZBU is now operating from his new QTH at Hornsby and 2ZFC and 2ZCW are new mobiles. Activity on the band is good and contacts between Neville 2DR at Blayney and 2ZCF and 2ANF are being made again. Dick 2ZCF and his brother-in-law, Alan 2ZAL, are now monitoring Explorer satelliites with good signals being received. Wal 2MZ has been heard portable from his holiday location at Patonga.

6 Metres.—On 23/2/59 Adrian 2HE worked 10 JAs between 1420 and 1544 hours, our first break-through to JA this year, and we congratulate Adrian on his perserverance. Also on 25/2/59 and /1/3/59 JAs were heard. 2ZMS at Greta and 2ZBX are now on six mx. Righto, chaps, times us, so will see you next month and keep the wick going on v.h.f.—2AWZ.

VICTORIA

6 Metres.—Activity on the 6 metre band for Feb. was quite low compared with 1958 and the awaited JA break-throughs only materialised on one occasion when George 3ZCG and Sid 3CI managed to work into JA at midday. During 1958, March proved to be the best month for JA and perhaps next month's "A.R." will give details of long-awaited openings. About 14 stations were active for the Feb. scramble which resulted in a draw between Peter 3ZFP and John 3ZAI.

2 Metres.—Local activity on this band has increased somewhat of late, especially in view of the decrease of activities on 6 metres. Conditions from Melbourne to the country districts have been consistently good and signals to Ballarat and Moe have been S9 plus. Max 3ZCW, at Ouyen, has been worked by a number of Melbourne stations and made it to Moe when he worked 3ZCG at S9. Activity at Ballarat is still consistently high and during Feb. Ballarat stations worked 3ZDP in Sale, 3ZAB in Traralgon, 3ZEA at Rainbow, 3NN at Yanac and 3ZCW in Ouyen. Interstate DX from Ballarat includes 5BC at Renmark, 5GJ at Mt. Gambier and 7PF. Stan 3SE should soon be heard again on 2 mx and new call signs on the band include 3VG (R.A.A.F. Station) and Kevin 3ZHH. So far Ballarat stations have had no luck with 2AJO at Coolamon, but have worked two new Melbourne stations—Ken 3ZFL and Dick 3RZ.

1 Metre.—Feb. saw the realisation of reliable two-way communication between Ballarat and Melbourne on 1 metre. Les 3ZCN, who is holding up the Ballarat end of things, has installed a 48 element beam and is running 90w. to a QQE06/40 final; his rx is xtal locked and uses a cascode 6BQ7-A into a grounded grid 6Q4 in the front end. Perhaps the greatest stalwart at the Melbourne end is Jock 3ZDG, who is using a QQE03/20 final running 30w., a 6 ft. yagi and a xtal locked converter using two 6BC4s in the front end. Signals have been over strength 9 on a number of occasions. Others worked by Les, either two-way or cross-band, are: Geoff 3AUX, Ian 3ZBP, David 3ZAT, John 3ZAI and George 3ZCG at Moe. Jock 3ZDG has also worked Ron 3ZER, operating portable at Castlemaine.—3ZAI.

QUEENSLAND

Feb. has passed, and what a month. Many nights spent up until the wee small hours of the morning, but not without reward. Bill 4ZBE got himself that KR6AK, "Cas", and got some information out of him. 4ZBE heard, and was heard by VS6CJ, but JA QRM ruined that one, but he is still listening.

KR6AK reports as follows: "Have worked the following stations (in order) VK4NG, KH6, VK4ZBE, VS6CJ, DU1CF. Also quite a few carriers on the band and he has heard Russ 9XK, but Russ went QRT before Cas could call him" (don't pull that switch before that final QRZ, never know what DX is listening to or calling you). KR6AK offers this word of warning to all VKs. "Please do not call quickly." He has heard a number of stations he could not identify because of slurred call signs, particularly, 4DI, but because of the quickness of the call sign could not identify the national prefix. KR6AK operates on any of 30 frequencies from 50.002 up to 50.275 Mc., but can usually be found around 50.080 on phone, but would like c.w. if you can use it. Some carriers are too weak to read the modulation, but would make 100 per cent. f.b. c.w. QSOs. Look for him when the JA6s are pouring in or just after they have folded.

George VS6CJ is on 50.090 Mc. on c.w. only after 1300 GMT. Next month I should have information on DU1 and DU9 activity. Hear VK2AED worked VE—congrats. There was an excellent opening in VK about two weeks ago. Only VK3 contact was 3CI. No sign of VK6—would anyone over there like a sked. 4ZBE worked 5ZAX by back scatter one dinner time. 4ZBE has worked over 200 JAs during Feb., but still requires that JA6 card for A.J.D. There appears to be hundreds of new JAs on, mainly JA1.

Local ionospheric prediction service has it that the prediction for April-May show an m.u.f. of over 45 Mc. to Europe, Egypt and Asia. Who is going to be the first VK to work all continents?—4ZBE.

SOUTH AUSTRALIA

When is the DX going to break? JAs have been heard off and on around 1230 hours on week days by a fortunate few. I understand that Hughie 5BC has been doing better than most with signals 8 to 9. Most reports from the city vary from 1 to 5. At one stage, 4HD was heard working JAs, but no sign of them here at that time.

A newcomer to the band is Neil 5ZDH. Neil uses a v.f.o. working on 50 Mc., isolating the final with a buffer. Quite a nice effort Neil, and it sounds as good as many of the v.f.o's. whose fundamentals are 4 and 3 Mc. Neil's location is One Tree Hill and should be a good position for working JAs.

The Fox Hunt was quite a success with many lessons learnt by the participants. Seven cars took part, all loaded with gear and secret weapons. One even sported a card table in the back seat with maps and dividers. The fox, Ken 5KC, was eventually found at a hillside suburb called Skye. Col. 5ZBD and yours truly being first home, and as Keith 5MT put it, with a lot of luck and celestial navigation. Hughie 5AV actually passed within 60 yards of the fox about 10 minutes before we arrived and he eventually finished second, a very good effort. Ron 5MK eventually turned up on his motor bike and I believe he has a snoop-loop under construction for the next fox hunt.

Clem 5GL has his mobile gear going again. It was necessary to convert it to a 12 volt system, using a 3/12 in the final with Heising modulation to the plate and screen. Bill 5HD heard testing the other night on low power. Wonder if its mobile gear? Keith 5MT has a mobile tx coming up and Rodney 5SX is building a xtal locked converter and tx for his A40.

More v.f.o's. are coming up. Graham 5ZAP has been heard testing with his and it seems quite stable. Barry 5ZBZ has one under way and having seen his present gear, I can well

imagine that it will be the best made v.f.o. in VK5.

Was having a chat to Sid 5ME, who tells me that he is very keen to get going with a t.v. signal on 288 Mc. with the phone on 144 Mc. Sid is anxious to contact any locals who could receive his transmissions.

The v.h.f. meeting was a huge success and VK5 now has its own V.h.f. Group, subject to ratification by Council. The constitution was agreed upon and passed at the meeting and the ballot for the Committee resulted in the election of Barry 5ZBZ, Al 5ZCR, Col 5RO, John 5ZBA and Neil 5ZAW.

Cheers for now. See you at the next fox hunt.—5ZAW.

On Sunday, March 8, John 5DJ, Doug 5KK, and Colin 5XY, situated at the top of Mt. Lofty, established contact with Vic. 5JH, situated just south of Snowtown, on 288 Mc. Signals were received at S8 at Mt. Lofty and about S7 at Snowtown. The distance covered was about 85 miles. Only time prevented greater distances being covered. Further attempts at greater distances are to be made later.—5XY.

WESTERN AUSTRALIA

Perhaps the main item of interest this month is the opening of the 50 Mc. beacon, put on by the V.h.f. Group of Western Australia. The frequency is 50.00 Mc. and the tx runs 20w. to an 807. Identification is by c.w. (auto) and call is VK6VF. At present the station is running into a yagi beam, but it is hoped that a stacked collinear array will be in use soon. Hours of operation are limited to those that an op. can be in attendance, roughly 1600 W.A.S.T. to 0800 W.A.S.T. This does vary from day to day. One thing you can be very sure of—if you hear it, someone is around so call like the dickens. A break in the transmission means that the op. is tuning the band from 50-51 Mc. The aim, of course, is to work Africa; this should help a lot.

JA broke through again during Feb. and many stations were contacted by the VK6 stations who have been on the band. The openings so far have been as good as last year's. In one sitting, 6ZBU worked 40 JA stations in one opening. HLKA has made daily appearances with signals running for hours at a time. Also around the 49.6 plus mark several f.m. networks have been heard. The origin of these is shrouded in mystery, but one could be in Okinawa; the voices are good old American.

The last Fox Hunt was run by Kevin 6ZCB and Cedric 6ZBC. The fox was very cunning, hiding behind a steel bridge on the wrong (for me) side of the river. At the last Group meeting a very enjoyable lecture was presented by Wally 6LW. He showed, and demonstrated, a 50 Mc. transistor powered tx. Unfortunately, a hold up in supplies of v.h.f. transistors prevented a complete demonstration in that the final was not running. However, results with the exciter really surprised those present. One at least is obtaining the bits to get something similar going himself.

Noel 6ZBG has been absent in the East. He has now returned and can be heard most evenings with the beam on Africa and India. Perseverance.

Jack 6ZBU has been "trams-portable" in Mandurah, putting a 5/9 signal into Perth (45 miles). He was also worked mobile between Pinjarra and Mandurah (50 miles)—no mean feat for 5w. and a mobile whip. Willie, the whiting, eluded Jack's line and bait, but we believe he made do with some cobblers.

6BO has almost finished the main part of his building operation and has started on his new shack. The "old man" has been having plenty of trouble from noisy power lines, and brother, we mean noisy!

Heard 6WG in Albany being called by JAs in one opening, which appeared to be general all over Australia, since VK7 was called also. 6ZBP was in the same opening.

6MG was worked from Kalamunda again on 6. Unfortunately signals were well and truly on the down grade by the time Mac was heard so the contact was not a good one.

That's about it for the month. Cheers.—6BE.

CORRESPONDENCE

Any opinion expressed under this heading is the individual opinion of the writer and does not necessarily coincide with that of the publishers.

AUSTRALIAN DXCC AWARD

Editor "A.R.," Dear Sir,

I feel that I had better rise to the bait of VK2QL's letter in the March issue of "A.R." For goodness sake don't do away with the Australian DXCC, as I have been trying to make the grade for years and don't want to be "pipped on the post" because a few are discontented!

I am quite happy to accept the W.I.A. list of countries. It is published in the January issue of "A.R." each year, so there is no excuse for members feeling "frustrated" in "trying to assess their countries worked"—you just check off against the W.I.A. list!

The objection to the use of the A.R.R.L. countries' list by N.Z.A.R.T. for the VK-ZL Contest seems trivial—if the N.Z.A.R.T. are to run it, let them run it their way. If you don't like the rules, why enter?

Re there not being room for two DXCC awards, there is one very good reason for having an Australian version—no one wants to risk sending his precious cards overseas, and perhaps losing them in the mails when he can qualify locally. In conclusion, I can see point in VK2QL's and VK3CX's criticism of the A.R.R.L. countries' list, but I think that is all the more reason to retain the W.I.A. DXCC. (I hope you get some more bites, VK2QL.)

—W. Stevenson, VK3AWS.

Editor "A.R.," Dear Sir,

Reference the letter from VK2QL in March issue concerning the Australian DXCC Award. I regret to disagree with my friend Frank in some aspects.

Let us retain the Australian DXCC Award—it's only a little behind the times and when the list is brought up to date it will be the same as the A.R.R.L. list.

Think of the time and money you save in not having to send your hard-earned QSLs over to U.S.A. in order to obtain credit.

This is a service which the W.I.A. is performing for its members. Let us make use of it.

We, the DX minded Hams, can make it what we want by the simple expedient of telling our own elected representatives on Federal Council just what we need in the way of an Australian DXCC. Let's do some lobbying and achieve our objective.

The reference by VK2QL to the number of countries in the A.R.R.L. list is simply explained. Some time ago "QST" published the rules which the DXCC follows in deciding what is a country. They still follow these rules. The July list of 290, to which VK2QL refers, is amended from time to time when new claims are put forward. Additions to the list are notified regularly in "QST" and by W1AW in official broadcasts. The DX fraternity know of them—they even know when applications are refused, as does happen.

I'm all for the W.I.A. and its Australian DXCC—thanks to the Institute for another service to the Australian Ham.

—Alan Brown, VK3CX.

50 Mc. W.A.S.

Editor "A.R.," Dear Sir,

As I, like many others, have worked all States on 50 Mc., but because I am unable to work anyone in the Northern Territory, which is a VK5 area, I am not able to claim the W.A.S. Certificate.

As there has not been anyone on 50 Mc. for some years and may never be, must I and others be penalised through no fault of ours? I worked all States but the Northern Territory in 1951 and twice since (including this year). Isn't it about time something was done about it so a few more call signs can be added to the 17 published each month?

—A. W. Rushby, VK2ABR.

SURPLUS RADIO EQUIPMENT

Editor "A.R.," Dear Sir,

In the March '59 issue of the magazine there is a summary of surplus radio equipment. One of the pieces of equipment mentioned is a R/89/ARN-5A (page 8, left hand column, 4th item from bottom) and this is listed as having seven 6AG5s. This is incorrect; the tubes are 6AJ5s, or at least in the two units I have, they are.

It may be of some interest to note that this unit contains three tunable, co-axial lines, ideal for use in 288 Mc. converters.

—David Rankin, VK3ZAQ.

PROPER UTILISATION OF THOSE BANDS

Editor "A.R.," Dear Sir,

Perhaps the following might create a little interest and be of assistance to the fight for the retention of frequencies for the use of the Amateur service.

Last night I had the very good fortune to hear the very fine address given by the Federal President of the Wireless Institute of Australia, Mr. Max Hull, over VK2WI. It is indeed a great pity that this splendid address will only be heard by possibly a relatively small percentage of those who profess to be Amateurs.

As one who has listened around the bands, at all times of the day and night for many years, I can fully appreciate the difficulties confronting the worthy delegate to the I.T.U. Very little assistance, other than financial, is being given by many of the Amateurs. This is well illustrated by the very poor use made of the bands, especially in conducting experiments. There are some who use the bands regularly, but, unfortunately, indulge in endless inane chatter, sometimes sheer drivel, or in using their privileged position to moan about wool prices, discuss religion (especially a certain visitor), decry the efforts of those conducting emergency nets (how dare they want to keep one frequnecy clear), make personal attacks on others (in their absence of course), or to boost some commercial gear—quite often indulging in blatant advertising—none of these things help the status of Amateur Radio, especially when one remembers that there are interested observers taking note. How on earth can the I.T.U. representative justify the retention of the frequencies when such gross abuse of them is taking place—remember that these observers are not deaf, but very much on the alert!

If you want to retain the existing frequenies, give your I.T.U. representative your active support by using the bands and conducting worthwhile experiments, with of course a moderate amount of individual natter.

—Ian Drysdale, Assoc. Member VK3 & VK2.
Assoc. N.Z.A.R.T. and R.S.G.B.

NOTES

FEDERAL

AMENDMENTS TO THE FEDERAL CONSTITUTION

Under the direction of the Federal Council of the Wireless Institute of Australia, the Federal Executive hereby gives notice that it is intended to alter the Federal Constitution (1947) of the W.I.A. as follows:—

Interpretation: By adding the following—"Fiscal Year" means one calendar year commencing 1st March.

Para. 9: By deleting the words: "Commencement of the Federal Convention" and inserting in lieu thereof the words "Conclusion of the fiscal year".

Para. 15: By deleting the word "annual".

Para. 21: By deleting the words from "annually" in the third line to "attend" in the fifth line and inserting in lieu thereof the following: "at least 30 days prior to the conclusion of the fiscal year and shall take office not later than 60 days after the conclusion of the fiscal year or at the conclusion of the Federal Convention, whichever is the sooner".

Para. 28: By adding at the end of the first sentence after "Federal Executive" in the fifth line the words "who shall lay down their terms of reference".

Para. 34: By deleting all after the word "possible" in the 13th line.

Para. 40: By deleting the entire Paragraph 40 and inserting in lieu thereof the following: "At the conclusion of the Federal Convention or within 30 days of the conclusion of the fiscal year, the Federal Treasurer shall present for the approval of the Federal Council statements of receipts and expenditure, balance sheet and Auditor's Report for the preceding year, together with a budget of expenditure anticipated in the ensuing year".

Para. 56: By deleting the words "by a special levy on all full members of each Division" from the second and third lines and inserting in lieu thereof the words: "from the Divisions by a special per capita payment based on all full members of each Division".

Para. 72: By inserting after the word "Divisions" in the first line the word "voting" and by deleting the words "voting in the negative" in the fourth line and inserting in lieu thereof the words "abstained from voting".

T.V. OPERATOR'S CERTIFICATE OF PROFICIENCY EXAMINATION

The Australian Broadcasting Control Board has notified the following candidates that they were successful at the examination for the Television Operator's Certificate of Proficiency held in Sydney, Melbourne, Brisbane, Adelaide, Perth and Hobart on 9th December, 1958:

Sydney: N. L. T. Ancher, R. J. Aylett, A. A. Bell, E. Berlage, S. J. H. Brown, R. M. Catchpoole, M. Cowan, E. J. Eckert, M. J. Johnson, R. A. Lapham, C. K. P. Louer, K. W. Marsden, A. Pearson, J. G. South, H. B. Stockwell, P. Salinger.

Melbourne: S. B. S. Backhouse, R. K. Burbidge, W. A. Fulton, P. C. Gorman, R. E. A. Grigson, R. D. Haggith, A. R. Henley, I. R. Israel, E. M. Kennewell, G. P. Lee, A. J. Lyons, R. C. G. McGowan, B. E. Martin, W. S. Morrison, F. J. O'Callaghan, R. R. O'Neil, J. T. Pease, A. Robinson, B. S. Swinburne, M. P. Titchener, F. G. Westaway, A. Zylewicz.

Brisbane: W. H. Marshall.

Adelaide: B. G. Hammond, B. M. Hall.

CONTEST CALENDAR

Compiled by W.I.A. Fed. Contest Com.

★

NATIONAL FIELD DAY:

Comments on a change of date and on holding extra field days during the year would be appreciated.

OZ C.C.C.:

Date: May 3-4.
All Bands.

REMEMB. DAY CONTEST, 1959:

Dates: Saturday, 15th August, to Sunday, 16th August, 1959.
Duration: 1800 hrs. E.A.S.T. to 1759 hrs.
Rules: As for 1958.

VK-ZL DX CONTEST, 1959:

Dates: **Phone**—1000 GMT, Saturday, 3rd Oct.—1000 GMT, 4th Oct.
C.W.—10th Oct.—11th Oct., 1959.

NEW SOUTH WALES

The February monthly meeting of the Division was held as usual at Science House, Gloucester Street, Sydney, on Friday, the 27th, at 7.45 p.m. Members were looking forward to this gathering as a lecture on Single Side Band was on the agenda for the evening. The attendance was in the vicinity of ninety, including some guests in the form of country members, also YL Amateurs. The lecture, entitled "Cheap and Easy Side Band" was very well conducted by Dr. Leo McMahon, VK2AC. Leo is well known to all through his consistent appearance over the years on 14 Mc. s.s.b., and of recent months he has been very active on the 7 Mc. band with the proverbial "Duck Talker".

The lecture covered many aspects of single side band, the systems used, and those systems which appeared to be of easy construction and most practical for the Amateur of today who intends to take the new approach to Amateur two-way communication in the form of s.s.b. Dr. McMahon's address, with its consistent insertion of humorous remarks, brought widespread applause and laughter which made the lecture very absorbing. Members went away from Science House very much enlightened and full of enthusiasm. Stan 2EL ably assisted the Dr. in the form of "black board rubber-outer". Many pieces of equipment were on display from portable to home units. Much interest was shown in this gear at the conclusion of the meeting during the usual "coffee break".

A vote of thanks to Leo for his very fine lecture was moved by our old friend, Wal 2SA, and Science House reverberated with one of the greatest applauses given in many months. Everybody went home with the same idea in mind, and it should not be long before many more s.s.b. signals are heard on the various Amateur bands in this State.

The usual business was conducted after the lecture and it was brought to the members' notice by the Chairman that the fourth Friday in March, being Good Friday, Science House would not be available for the March general meeting. Council are endeavouring to obtain a suitable hall for one night during this week if possible. Because of this, the Annual General Meeting will take place on April 24 at Science House. Information from the Secretary leads us to believe that the membership in VK2 is rapidly approaching the 1,100 mark, which is very gratifying indeed.

A suggestion by Max 2OT on his 2WI broadcast a few Sundays ago that members turn out their pockets for small change and forward same to the Secretary as an extra donation to the rapidly approaching close of the I.T.U. Fund brought forward something over £20.

Some very good suggestions were brought forward by Joe 2JR regarding color slides and tapes for future lectures to be done for the benefit of country members in the form of club groups, etc.

The meeting closed at 10.35 for coffee and a general ragchew of events during the evening.

HUNTER BRANCH

The February general meeting was held as usual and the following boys were lucky enough to be in attendance to hear a well delivered lecture by Maurie Findlay, VK2PW: VKs 2CS, 2ASI, 2ZDL, 2RJ, 2AFA, 2ZL, 2SF, 2AEE, 2ZDF, 2QB, 2ZK, 2AQR and associates Sutherland, Hall, Bailey, Jackson, Roberts, Rugg, Gray, and Stobbs. Apologies were received from 2XT, 2ARV and MacLaughlan. Maurie certainly went to town with a clear and precise talk interspersed with colour slides of equipment and circuitry. With the excellent array of lecturers and their subjects I am more than surprised that there are not greater attendances, particularly from those close at hand. One quarter of those who attend, invariably come more than 14 miles. The same applies to the social get-togethers at Bill 2XT's tavern on the fourth Wednesday of the month.

However, getting back to the point, Maurie was sincerely congratulated for his oratory and information and I am sure the mobile seed has been sown.

Sid 2APS spent some time in Newcastle and visited some of the locals. Congrats to Mac 2ZMO on attainnig his Z call; Mac has not long returned from a holiday down south. Bill 2ZL and Bob 2AQR, with their spouses, took a quick trip to Wal 2AXH at Terrigal to see what the ZLers had done to him. However, Wal looks bigger and brighter than ever. Worked Rodney 2CN, who was on his mobile 7-watter, quite a good signal Rodney, but Pop 2AHL got you better; at least he was more generous with his report. Let's hope that Stan 2ZDL has found the trouble in his 144 mc. rx; Stan told Stuart 2ZDF that his signal was playing tricks which no respectable 144 mc. signal should do over such a short distance and thought it must be the rx. Little did he know that the Prince of Pranksters, Gordon Sutherland, was turning Stuart's beam round and round. No flowers by request!

By the time you read these notes our annual meeting will be history and maybe there will be a few new names in office. Next meeting, John 2JU, your I.T.U. Representative, will be here demonstrating his stereophonic equipment. If you have not sent in your donation to the I.T.U. Fund, here's your chance to square your conscience. See you there at the University of N.S.W., Tighes Hill, at 8 p.m. on the 10th. Of course, Bill will again be host (mine and yours) around the billiard table on the 22nd.

VICTORIA

At this particular time when the frequency allocation fight, to be conducted at the forthcoming I.T.U. Conference, is just around the corner, you would expect members to be interested in finding out what it is all about, but such does not appear to be the case. This is evidenced by the fact that only 24 turned up at the last meeting to hear our Federal President, Max Hull, give an address on tape on this particularly important subject.

Admittedly the night was wet and there were other attractions such as the Fair to keep people away, but our frequencies are our life blood and unless we put more effort into keeping them than others are putting in to take them away from us, then the results must be obvious.

The upsurge in the use of radio for every conceivable purpose has been so great over the last few years and the pressures so high for more and more frequencies, that the allocation of these frequencies is becoming a tremendously complex task. The job was allocated to the International Telecommunications Union who operate on a world-wide basis and they in turn have to make their decisions on the claims lodged by the users of all countries. Our Federal Executive is doing a tremendous job on our behalf in this matter by raising our voice at Governmental levels where the resolution of these things is started, but they need our support in a big way. Not the lukewarm effort we displayed at the last meeting. The captain of any team must have the support of his team mates if he is to stand any chance of winning and that's where we come into the picture.

No doubt a tremendous amount of interest is being displayed in these things as is evidenced by the support given to the I.T.U. Fund which was started to finance our own representative in the person of John Moyle in attending the Conference, but it needs much more than this to win the day. It needs effort, constant effort on the part of all of us. We must use our bands, attend our meetings, and generally get fired up for the cause. Yes, I know, it's very difficult sometimes to justify in our own minds the effort this takes, but we must do it. We simply can't afford to leave it to the other chap any more, otherwise one sad morning we are going to wake up and find that our diffidence has cost us our bands. Don't kid yourself that this can't happen because although the A.R.R.L. and R.S.G.B. will most likely hold the allocations in their zones through their well substantiated claims, there is no guarantee that this time we, in Zone 3, will automatically obtain the same

NEW ADDRESS FOR MAIL TO "AMATEUR RADIO"

All manuscripts, notes and correspondence to "Amateur Radio" should be forwarded to:—

P.O. BOX 36,
EAST MELBOURNE, C.2,
VICTORIA.

benefits. This is borne out by what happened at the last I.T.U. Conference when we missed out rather badly. On that occasion we had no representative and relied on the generosity of others to state our case.

This time it is up to us to a large extent and if we back our representative to the full, there is every chance that he will be in a position to influence the issue to our advantage. If we don't use our bands we stand to lose them. This is fundamental, and what proof are we giving that we really need our present allocations? Take a look around the bands sometimes. Others do and become vocal at the lack of activity displayed. How many chaps have had licences for years and never been active? You would be surprised if you knew. Officialdom and frequency seekers have eyes and ears the same as we have and this is not the sort of thing that wins friends and influences people to our way of thinking.

We have plenty of evidence to prove conclusively that we need our bands and can put them to far better use than most of those who would deprive us of them, but what are we doing to prove these points? Yes, I know, there are active groups here and there plugging away doing their bit, about 1,500 blokes have contributed to the I.T.U. Fund and we are endowed with a solid core of enthusiastic workers of the calibre of Max Hull pushing our case, but theirs is a voice in the wilderness without amplification. We need all the Amateur fraternity to be lending their weight to the cause, not the willing few. In this way the willing few will be spurred on to even greater efforts and we could really go places.

The average chap does not appreciate how disheartening it can be for an office-bearer in an organisation to be left on his own and not have the active support of his members. When it is all boiled down, this matter of frequency allocations is not something that affects only the upper strata of the Institute as some chaps seem to believe, it affects all of us even posterity if we like to look that far ahead.

It should be quite clear then that unless we can find time to throw our weight behind the wheel and take a keen interest in what is going on, the cause which has been so carefully built up to its present state is going to be lost. Maybe not entirely but to what extent—who knows

Therefore resolve to get into this business. Find out the facts by listening to our Federal President's address. This shouldn't be hard because it is recorded on a number of tapes and will no doubt be available to groups to hear. It will also probably be broadcast over 3WI and should appear in the magazine, so for goodness sake make it your business to hear it. It will open your eyes to some very interesting facts and if taken to heart will be the means of obtaining that united effort which is essential if we are to advance and justify our existence.

Remember, there are not nearly enough frequencies to go around and most of those seeking them have loud voices and stiff backing. At the moment the Amateur organisation is a recognised service for the purpose of frequency allocations and we must keep it that way. This state of affairs has been mainly due to the efforts of the A.R.R.L. and the R.S.G.B. With the pressures that now exist it is too much to expect that these organisations can fight our cause any longer and we must stand on our own feet. Executive has done its part most ably by obtaining an accredited representative to accompany the Government team to the Conference. It is now up to us to give them the necessary backing to give substance to their arguments.

Don't say you haven't been warned. The writing is on the wall and if you want to keep your bands, then you must give your active support to the utmost of your ability. There is no alternative to this I am afraid, so get cracking!

New members admitted at the meeting were W. J. Hewitt (3PH) and A. F. Nickson (3NB).

The next monthly meeting of the Division is the Annual General Meeting. There will, therefore, be no lecture on this occasion.

EASTERN ZONE

Activity in the zone is very lax at present. What about it boys, don't you remember we have a zone hook-up on Sunday at 8 p.m. on 3650 Kc. Believe Ron 3PR is rebuilding the rf.. generator in an effort to cure t.v.i. The 2 mx gang still appear to be active, including 3ZAB, 3ZCR, 3ZDP, 3TH and 3ZD. Reg 3ZCR is going for the full ticket. David 3DY is home building and filling in spare moments constructing an 813 final.

NORTH EASTERN ZONE

Things very quiet up this way with not much activity reported. 3AGG now moved into his new shack complete with beam motor, electrical indicators and what have you. A very nice set-up if I may say so. Brian 3ASF now has a quad in the course of erection and in due course hopes to be amongst the DX on 20 mx. Like to welcome to the Ham fraternity 3UW at Bandiana and 3ZGI of Shepparton, while a newcomer to the Zone is 3PN at Mangalore. Sid 3CI is off on another jaunt to Gippsland and I suspect it is for fishing.

Most news of the month comes from Kyabram where 3AHO has a Sterba curtain, a rhombic for 10, 15, 20, and a t.v. antenna surrounding the QTH. Bill has been getting good results on 10 mx during the afternoon, 15 mx treating him very well as he has worked and confirmed 100 countries for his DXCC (confirmed) in the last six months. This is really good as many of us have been struggling for years to obtain the confirmations for DXCC with little results. Bill tells me that the rhombic is really OK on 10 and 15, but the

W.I.A. SOUTH WEST. ZONE

CONVENTION

will be held at

GEELONG

on

11th and 12th APRIL, 1959

A welcome is extended to all those interested to attend. Activity mainly will be centred on 3.5 and 7 mc. and v.h.f. Hotel and dinner bookings must be made not later than one week prior to Convention—10/- deposit for hotel booking. Further information is available from Geelong Amateur Radio Club members and Sunday morning VK3WI Broadcast.

Sterba is the best on 20 mx. I must add that the input to Bill's rig is only 10 watts. Now that IS rubbing it in. A new rx adorns the shack and the s.s.b. rig is consistently used.

Only thing from Wang. way is that Jim 3JK concluded his swap deal successfully and my offer of bottle tops was ignored. Associate Jim Harrington contemplating buying a new car. Wonder if the mobile gear for the bush fire net will have a place in it?

Members are advised that the address given in the notes for the zone correspondent, North Eastern type, is a little out of date. The correct address is 3JC, Park Street, Tatura, and now I expect to get a little information by mail. (Due notification of a change of correspondent, on a separate sheet of copy, will effect the necessary change.—Ed.)

Ken 3KR please note. Film can arrives every Tuesday from you or Keith, both Hams, both in Benalla, so I expect Benalla news for next month, or else.

I woud like to hear from the President and the Secretary of the zone also, understand the Secretary is a long way from a post office—about five yards, so please, a few lines on your activities. I'm on the phone, too.—3JC.

GEELONG AMATEUR RADIO CLUB

The main item of club news for April is, of course, the S.W. Zone W.I.A. Convention. This is to be held on 11th and 12th. For those not able to listen to VK3WI on Sunday mornings, here, briefly, is the programme.

Saturday, 11th.—Check in at the club rooms at the rear of the Congregational Church, Gherringhap Street at any time during the afternoon. Geelong stations will be on the air to "talk-in" mobiles throughout the afternoon, operating on 3.5, 7, 144 and 288 Mc. The dinner will be at the club rooms at 6.30 p.m. with the meeting to follow at 8 p.m. Ladies who attend the dinner and do not wish to "sit through" the meeting are invited to watch t.v. at 3BU's studio.

Sunday, 12th.—Those taking part in the h.f. (3.5 Mc.) and v.h.f. (144 and 288 Mc.) tx hunts are to assemble in front of 3BU's studio in Gherringhap St. at 9.45 a.m. Sealed maps will be available for those who have any doubts about reaching the hidden tx's unaided. These tx's will be on from 10-11.30 a.m. At 11,30 we tune into the W.I.A. news and lunch is at 12 o'clock.

The assembly place for lunch and the afternoon events is at the Eastern Gardens. A portable station will be on the air from the location should anyone require directions during the morning. An interesting programme has been arranged for the afternoon including an all-band (3.5-30 Mc.) scramble and a v.h.f. scramble (50-288 Mc.). Mobile s.w.l's. have not been forgotten, neither have the ladies and harmonics. Afternoon tea is timed for 3.30 with the distribution of prizes, to close the show, at 3.45 p.m.

It has been suggested that the v.h.f. boys hold a meeting during the Convention to discuss the use of frequencies within the v.h.f. bands. However, more information on this will be available on the Sunday morning broadcast prior to the Convention.

Club activity on Wednesday evenings recently has centred around the receiving side of Ham Radio. Several v.h.f. converters are being built following a discussion night on the subject. Rx's for the lower frequencies were fully covered at a later meeting. 3ALG gave a very interesting talk on an efficient t.r.f. rx, 3SY told us of the British Racal RA-17 rx, 3ABT had a few words on the current trends in building Amateur rx's and Eric Coxall had some really good information on Command Set modifications.

Syllabus items for April: "Transistors for Amateur Use" will be the subject of a lecture on April 8 by Ron 3AYB, and tx hunts will be held on 1st and 29th. See you all at the Convention.—3ABT.

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QUEENSLAND

TOWNSVILLE

Quite a considerable number again turned up to the monthly meeting. A lively discussion took place on the various reports given. Our publicity officer, 4PF, outlined the various ways in which he intends to bring before the public, via newspaper articles, the doings of the local Amateurs and the Amateur body as a whole throughout the world. Had a piece in the local paper during recent cyclone, which was also mentioned over the air in the news session. Keep up the good work, Frank, don't let the interest wane.

It was decided to appoint a liaison officer between the Club and the official body of the W.I.A., 4RW being appointed to this post after many stirring addresses given in his favor for his previous services in keeping the Northern boys in the limelight. (Sorry boys, I belong to the Blue Ribbon Society, no 807 next meeting.)

The technical officer, Graham 4BX, mentioned the local furore caused by a modulated carrier on 500 Kc. and woe betide the culprit if found. Glad to report the local Amateurs have been absolved from this interference.

John 4DD, the librarian, staggered along under a load of books for the boys to choose from. He will need a trailer before long. George 4TQ offered back copies of radio publications for use and disposal. John is grabbing some for use in the library.

Two old members rejoined the club, namely 4EL and 4LD. Hope to see you both at the next meeting and give benefit of your experiences. The Z boys are really having a field day on 50 Mc. and could not care less for the lower frequencies to gain a full licence. But wait till conditions fade and then there will be a weeping and gnashing of teeth as they try for c.w. Bill 4ZBE quite proud in working a KR6, but bemoans the fact the JA would not let him work VS6. He has heard VK6 too, but so far no contact. 4ZAK and 4ZAW are also busy ragchewing, helped out by Vern 4LK who patiently draws them along in the pursuit of higher frequencies. Bob 4CR just returned from Sydney on leave. Believe 2ALY lost his favorite seat in front of the t.v. set while Bob was there.

Heard that Colin 4CE has moved from his old QTH and now causing local QRM in Townsville. Alan 4BE back at work after sojourn in the South. Alan 4PS trying hard to coordinate his various jobs—radio club, moon watch and couple of others in running his business. Just as well Alan you are single, an XYL would soon stop your various activities. Bert 4LB quite happy chasing DX on 14 Mc., but wishes he were on the other bands when he listens to the locals doing their stuff on them. Charlie 4BQ looking forward to Easter holidays to finish his tx. Wal 4RU and Ed. 4WH not yet on the air, but should be very soon. Don 4PW resigned from Railway Department; no longer can I send him memos re loss of black diamonds. Taken up private business in Mackay at Service Station. You will be sorry, no more 40 hours per week, daylight to midnight every day in future, hi!

Following forwarded by 4ZW of Far Northern boys. A great number of the local stations have been conspicuous by their absence this month. Heard Claude 4UX belting Basil's (4ZW) ears one night about transistor preamps. Claude has been transferred to Townsville. Alex 4MA, I believe, has been sunk by that tin dredge they have out there. How about coming on the air Alex and let's know you are still alive? Bert 4BP, with his 125w., flattened my rx one night when he checked in to the W.I.A. emergency net. A very good signal Bert. Harry 4HO, the milkman from Mossman, is still having trouble with microswitches; pulls the switch, no h.t. Arthur 4SM has his 813 perking on 14 megs., works Ted 4MH daily, earbashing, telling about the biguns that got away.

After a long absence, Roy 4AX put his rig on the air, reckons he may as well use his call as everybody else does; got a bit of trouble in the modulator, though. Young Bob 4TK, from Innisfail, getting corns on his typewriter fingers, don't know what he is doing, remember, Bob, I want the 1,000,000th copy autographed. Have heard c.w. signals going between 4TK and 4ZW, getting their hands or should I say wrists in again. Basil has two budding Hams on the go, so has to practice the morse so that he can keep up with them. Sir Vernon 4LK still listens on 6 mx, won't work the Japs though, says he's had them; try working them on 2 mx Vern! Vern has a theory—a high pressure system over the Tasman, a low over the Central of Australia, and the Southern States pour in on 6 mx. Seems to work, too.

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SOUTH AUSTRALIA

The last meeting was a dual affair, Annual General Meeting with all its trimmings, followed by the usual monthly meeting, and it was very pleasing to see the large number who attended, indicating a good interest in the straight administrative affairs of the Division.

It may, or may not, have been a coincidence but the only visitor there was a spy from VK3, a pal of Pincott's, by the way, that lead to darker thoughts on the matter, none other than David 3ZAQ, and strangely enough he was seen in the company of Pansy 5PS, so it looks like Pansy is also suspect.

Anyway, we cannot do better this month than to quote the President's report complete, which Brian 5CA delivered in his usual style, being as follows:—

Gentlemen,

It is my privilege as President of this Division to present the Annual Report, which is a summary of the activities of the Division for the fiscal year ending 28th February, 1959, and which incorporated the reports of the Honorary Secretary, the Communications Officer, and the QSL Officer.

Membership.—There has been another slight increase in membership during the year in both Full and Associate grades, the figures now being 267 Full members and 166 Associate members, making a total of 432 compared with 385 last year and 350 the year before. There are 81 Full members and 39 Associate members located outside the metropolitan area.

Council.—Following the 1958 Annual General Meeting, members of Council appointed the following officers—President: B. W. Austin, (5CA); Vice-Presidents: L. F. Brice (5OK) and E. C. Daw (5EF); Treasurer: H. E. Vivian (5FO); Minute Secretary: L. F. Brice; Divisional Sub-Editor: E. C. Daw; Federal Councillor: R. Richards (5DO); Technical Officer: E. A. Barbier (5MD); Membership Organiser: L. Duncan (5AX); Operator of the Official Station 5WI and Institute Representative on the Moonwatch Committee: G. M. Bowen (5XU). W. W. Parsons (5PS) remained the Public Officer, and N. Coltman was again appointed Associate's Rerpesentative.

Mr. J. C. Haseldine (5JC) was co-opted to Council and was appointed Honorary Secretary. During the year Jim Vivian resigned as Honorary Treasurer and Clem Appleby (5ZBV) was co-opted to Council to take Jim's place.

Finance.—The financial position of the Division is very sound, due mainly to the close watch on the finances kept by the Treasurer, whose report will be given separately.

Wireless Institute Civil Emergency Net.—The net has now been in operation for over a year, and a number of practices with various E.F.S. centres have been held. Aerials have been erected at seven country E.F.S. headquarters and are ready for use in an emergency. In January, during the bushfire in the Victor Harbour-Goolwa area, the net was called upon for assistance and communication was established between Goolwa and Adelaide and maintained for a period of seventeen hours.

Jim Sullivan (5JK) resigned from the W.I.C.E.N. Committee due to ill health and the position of Chairman was filled by John Bulling (5KX). Jim did a great deal of work on behalf of the net and it is not too much to say that without him there would have been no W.I.C.E.N. in this State.

Advisory Committee.—This Committee functions under the Chairmanship of H. M. Brown, one of the local Radio Inspectors, and its duty is to advise Amateurs of any breach of the regulations, rather than have official departmental action taken. The Institute has 50% representation on the Committee.

Contests.—The Federal Contest Committee was again supplied by this Division and consisted of Messrs. G. Bowen (Chairman), R. Richards (Contest Manager) and Messrs. R. Harris (5RR), L. Catford (5LC) and R. Galle (5QR). They will be laying down their burden and the members of the Committee will be supplied by another Division.

Official Station.—The weekly broadcasts have been maintained throughout the year on each Sunday morning at 10 on 7146 Kc. These are carried out by Gordon Bowen (5XU) and the programme is relayed on 50, 144 and 288 Mc. Norm Coltman regularly gives notes to Associate Members during the broadcast.

A.O.C.P.—Classes in electronic theory and Morse Code have again been conducted by Messrs. John Allan (5UL) and Bruce Bussenschutt (5OR). The 1958 class started with 21 members, of whom the majority passed the P.M.G. examination. The 1959 class has got off to a good start with 17 students.

I would like to congratulate the successful students from last year's class and to thank the lecturers for their efforts.

Disposals Committee.—The Committee consists of Messrs. Barbier, Vivian and Austin, and they have been active during the year on your behalf. A contact has been made with a firm in London and it is hoped that disposals gear will become available from this source as well as locally.

Test Equipment.—Members are reminded that the Equipment Officer, E. A. Barbier, holds a Cathode Ray Oscillograph, Modulated Oscillator, and a Philiscope, all of which are available on loan to members, and in addition he will test any valves which are brought to him. Equipment borrowed should be returned as soon as possible, to prevent others waiting.

T.v.i. Committee.—Mr. Ray Tuck (5BT) is Chairman of the Committee and members may seek advice on t.v.i. and b.c.i. problems, and have measurements made on their equipment by contacting the Committee.

Magazine.—Mr. E. C. Daw is Divisional Sub-Editor of the Magazine, and he does a fine job with the Divisional notes. He is always anxious to obtain news items of interest for the monthly notes as well as technical articles. During the year this Division contributed several articles for the magazine and I trust that during the next twelve months those of you who have items of interest will forward them to Comps.

The v.h.f. notes were supplied by Neil White (5ZAW).

Silent Keys.—During the year Doug Whitburn passed away. Doug was one of our earliest members and served the Institute in many capacities. To most members he is associated with our Buy and Sell nights, and they have, in a way, become a memorial to him. To his widow and to his three children, we extend our deepest sympathy.

Lectures.—Five lectures on various technical electronic subjects were delivered during the year and in addition a special meeting was held at the Physics Department, University of Adelaide at which a number of brief talks were given on radio and electrical theory. The other monthly meetings were taken up with two Buy and Sell nights, two Picture evenings, a display of members' gear, and the Christmas Social.

To all the lecturers, and to Messrs. Parsons and Coltman, who conducted the Buy and Sell nights, I tender my thanks.

Associates' Representative.—Norm Coltman has done this job for several years, bringing to Council's notice many things of particular interest to our Associate members. Unfortunately, he is unable to continue in the position in future and I would like to take this opportunity of thanking him for his many hours of work.

Communications Officer.—Mr. J. Kilgariff (5JT) continued as Communications Officer and has handled all inter-Division traffic during regular weekly schedules. He reports as follows: Messages handled—Outwards: 16 messages, 323 groups; Inwards: 45 messages, 1,458 groups.

QSL Officer.—George Luxon (5RX) has been QSL Officer for many years. This service is one which is appreciated by all members, and our thanks go to George for the quietly efficient way he handles it.

General.—This year has been a very busy one for the Institute. Council members generally and, in particular, members of Committees have spent many hours in the performance of their duties, and to them I would like to express my appreciation.

W.I.C.E.N. and the Satellites have brought much favourable publicity for the Institute.

The notes in the "Advertiser" are still supplied by Warwick Parsons in spite of the occasional dearth of news, and I would like to thank him for his efforts on our behalf.

My first year of office has been made easy by the co-operation and assistance, not only of Council members, but of all members of this Division.

Finally, I would like to express my gratitude to the members of Council for their confidence in electing me to the Presidency, and to thank each member for his loyal support and guidance during the past year.

Needless to say the report was adopted, as also was that of the Treasurer who dazzled us with figures, but once again informed members that as a result of the healthy state of finances no membership increases were contemplated.

Next month we will bring you up-to-date on the new Council personnel and the officers for the year; space will not permit at this juncture to enlarge any further.

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WESTERN AUSTRALIA

At the last meeting we had the pleasure of renewing acquaintance with Uncle Dave, W2APF, who is on a world tour. Dave addressed the meeting in his own inimitable style. Following on, we were addressed by George 6GH, our patron, who has just returned from a tour of Japan and the U.S.A. Both talks were very much appreciated by all.

Present also at this meeting were two of our country members—Francis 6WD and Bob 6ZBY. Francis went on the next day visiting 6BE and then 6WL in Brookton. Unfortunately Francis had car trouble all the way home, suffering some damage to the internal works of the vehicle, due to a most unusual fault.

6KW, Federal Councillor for this Division, has already left for Melbourne and Sydney. During his stay he will attend the Federal Convention of the Institute in Melbourne. One item submitted by this State is that the next Convention be held in VK6 during the Empire Games year, 1962. It is realised that some considerable amount of finance must be contributed by this Division to compensate the other States, but we think it should be worthwhile. Financially, we must remember that VK2 and VK3 contribute most of the fares to the Convention held in Melbourne; the extra we will have to put in will not cover what has been subsidised by the larger States during the last 35 years. Incidentally, the last Convention to be held in VK6 was the second one in 1925. Present members 6AG, 6BB and 6WP, were all present at that Convention, all in official capacities.

A new meeting place has been found for the general meetings in the main Trades Block of the Technical School. This was necessitated by the demolition of the Annexe buildings to make way for the Freeway for "That Bridge".

6GB and 6ZBU (at present tram-bound in Mandurah) continue their nightly Owlhoots, this time all on 50 Mc. Getting past the cross-town natter at 45 miles.

6HC and 6TK can be heard schedding nightly on 3.7 also. Don't hear much of you these days, Terry.

Mal 6SM has really got it bad on the DX bands. He can be heard nightly on 10 or 15 metres. Believe Mal has passed the century and very nearly has the required number of QSLs. Nice going for 12 months or so of operation.

News is scarce this time. Not much doing at present, so will give it away for this month. Cheers.

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TASMANIA

NORTH WESTERN ZONE

Hello, chaps! Yours truly at his typewriter once again. Another month has slipped by and it's time for these notes once more; I seem to be always scratching notes together for the zone. Our last zone meeting, in the form of a night of instruction, was held on March 3 at the usual QTH. 18 chaps turned up to both absorb and radiate knowledge. A lecture by Peter 7PF had to be postponed owing to a misunderstanding, but I guess we will hear that at a later date. Questions were asked for and duly answered by an appointed panel. A goodly talk on Regulations was delivered by our Secretary. Another of those colossal suppers was partaken of and enjoyed by all. Many hands made light work of the washing up too. A very small quantity of junk was disposed of and the evening ended with small groups gathering all round the meeting room and having the inevitable ragchew over their pet subjects and aversions.

A tx hunt (two in fact) was held on Feb. 22 with yours truly, 7TT, operating the hidden "source of annoyance". 7JO was first to show up on the first run, locating the hiding place by pulling down the antenna and following it into the bush. Signal reports were better with the antenna on the ground! A second hunt was provided after dinner, with associates Alan Baptist and Ray Schulze making a very quick catch. New associate Geoff Sharp was third in. Good work, Geoff! Afternoon tea was shared with the flies and I think a good day was had by all. I also believe there is to be another hunt organised before the weather breaks for winter.

What do you know chaps, Sam 7SM has got that last State, so has now (W.A.S.) worked all States.

Max 7MX has got his new rig in operation using about 60w. on all bands, I think, and is getting some very good reports using controversial screen modulation, too. You ought to see the modulator, it will fit into any decent-sized coat pocket—mike as well; seems to save that extra power supply and the usual costly modulation transformer also.

Don't forget the next general meeting will you, April 7. (Thanks for double spaced legible copy, Terry. Greatly appreciated.—Ed.)

HAMADS

1/- per line, minimum 3/-.

Advertisements under this heading will only be accepted from Institute Members who desire to dispose of equipment which is their own personal property. Copy must be received by 8th of the month, and remittance must accompany advertisement. Calculation of cost is based on an average of six words a line. Dealers' advertisements not accepted in this column.

DISPOSAL: Prop. Pitch Motor. 2 Selsyns, Transformer to suit, both lot for £15. 2 mx Tx and Rx, both xtal controlled, built around a 3-6 meg. Command Rx as an i.f. Also in same unit, d.f. equipment for 80 mx Tx hunt. Complete with xtal mic. and 300v. 125 ma. 240v. a.c. 6v. d.c. power supply, no speaker, £17/10/0. 829B, £2/10/0. Double spaced variable condensers suitable for split-statoring, 110 pF., 10/- each. 3 elements for 10 mx beam, £2 the set. 3 elements for 15 mx beam, £2 the set. Ring UM 7221 (Bus.) for further particulars. R. Yeats, 28 Elizabeth St., Clayton, Vic.

EXCHANGE or Sell: Triplet Signal Generator, Model 1632, 100 kc. to 120 mc., crystal calibrator, output meter, etc., with instruction book and circuit diagram, for Communication Receiver in good order. Cash adjustment if necessary. What offers? J. Rintoul, 11 Cintra Street, Ipswich, Qld.

FOR SALE: BC348 Rx with p.s. and spkr., £30. No. 11 Trans., works well, £5. Power trans., meters, etc., cheap. Want 22 or 122 Trans. Fisher, Fairview Av., Glen Waverley, Vic. UL 2428.

FOR SALE: Front end for Amateur Receiver, r.f. stage, bandspread, switched bands 3.5, 7, 7-11, 14 and 21, 28 mc. Only had few hours use. £12 or offer. M. A. Jones, 6 Powell St., Mt. Gambier, South Aust.

FOR SALE: Imported Panda PR120V Transmitter, 120w. input phone, 150 c.w., 2/807s parallel output pi-net to co-ax. outlet. Band switched 80 to 10, Completely enclosed in solid steel case, filtered leads, t.v.i. proof, carries maker's service, £285. This is not a minimitter but the full rated job. FS6 Transceiver, modified to crystal operation on 40 metres, and to plate and screen modulation, complete with vibrator power supply, phones, mike, cables, etc. £20. Inspection and enquiries invited. E. C. Daw, Box 44, Gawler, S.A.

FOR SALE: Tx-Rx Type 3 Mk. 2, complete with carry-case, perfect working order, £25. Universal Taylor 90A Test Meter, 40 ranges covering AC, DC, resistance, capacity, decibels, size 8" x 5¼" x 4", £7. Photax Professional Photographic Dryer (flat twin sided 24" x 18" rotatable) AC 200-250 volts, thermostatic control, with glazing plates, chrome plated stand; perfect, unmarked, as new, £25. Gnome Master enlarger (35 mm. to 2¼ x 3¼) with extension column, base board and masking frame, as new, £25. A. Swindon, 87 Brighton Rd., Elwood, S.3, Vic. XA 1432.

SELL: 150 watt shielded 6146 pi final Tx with Geloso v.f.o., 6146 AB1 modulator with compressor on same chassis. Heavy duty power supply A & R Transformers. 866s, voltage regulated v.f.o. and modulator screens. VR tube keying. Complete in two units. All new components, no junk. Circuits to buyer. Offers in vicinity of £100 to P. D. Williams, Kent-Hughes Rd., Eltham, Vic.

WANTED: Handbook for No. 19 A.W.A. Transceiver No. J8786. G. Warner, Bringelly, N.S.W.

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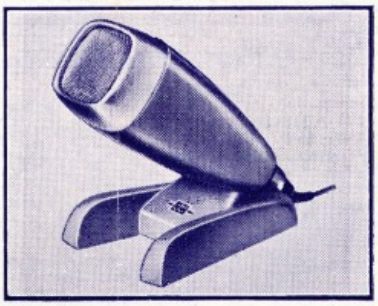

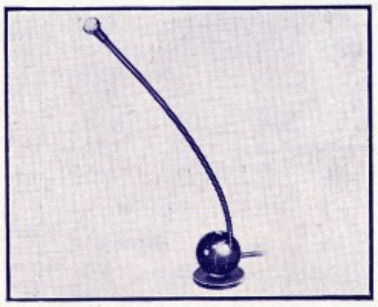

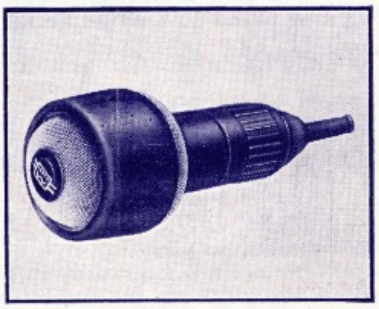

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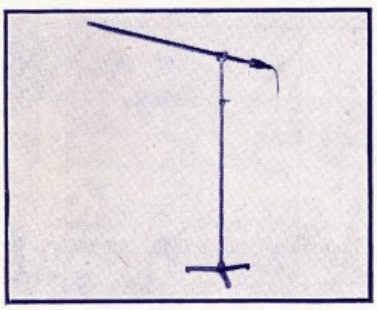

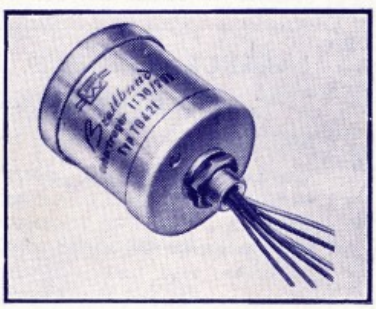

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